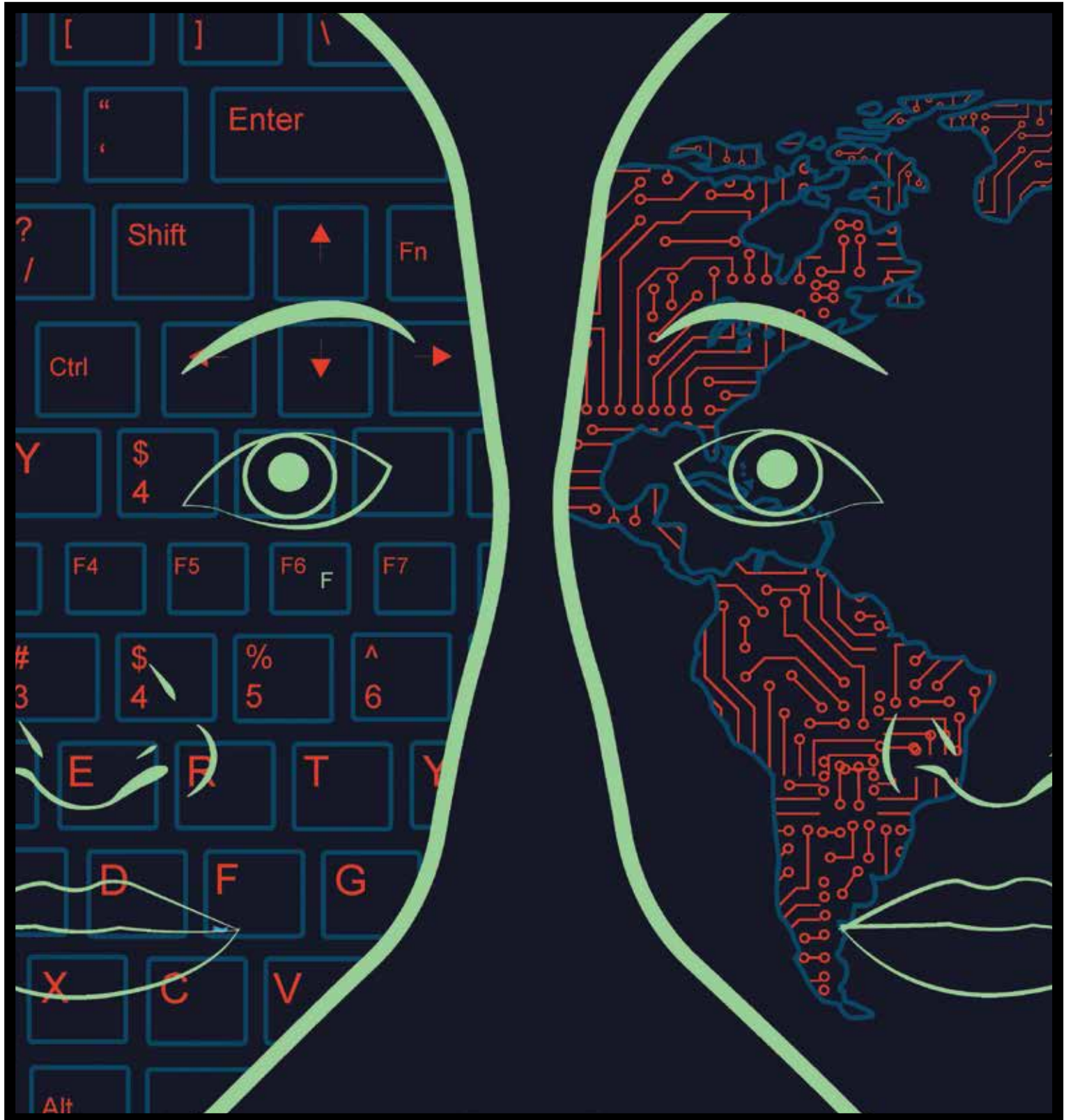


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What is a technical communicator? Technical communicators develop and design instructional and informational tools needed to ensure safe, appropriate, and effective use of science and technology, intellectual property, and manufactured products and services. Technical communicators combine multimedia knowledge and strong communication skills with technical expertise to provide education across the entire spectrum of users' abilities, technical experience, and visual and auditory capabilities. For more information visit www.stc.org/about-stc/defining-technical-communication.

The Society for Technical Communication is the largest association of technical communicators in the world. STC is currently classifying the Body of Knowledge for the field and communicating the value of technical communication. Its volunteer leadership continues to work with government bodies and standards organizations to increase awareness and accurate perception of technical communication. Membership is open to all with an interest in technical communication. Visit the STC Web site (www.stc.org) for details on membership categories, fees, and benefits.

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Technical COMMUNICATION

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Journal of the Society for Technical Communication

ARTICLES

APPLIED RESEARCH

- 97** Localizing Communities, Goals, Communication, and Inclusion: A Collaborative Approach

Ann Shivers-McNair and Clarissa San Diego

APPLIED RESEARCH

- 113** Of Scripts and Prototypes: A Two-Part Approach to User Experience Design for International Contexts

Kirk St.Amant

APPLIED RESEARCH

- 126** Converging Fields, Expanding Outcomes: Technical Communication, Translation, and Design at a Non-profit Organization

Laura Gonzales and Heather Noel Turner

APPLIED RESEARCH

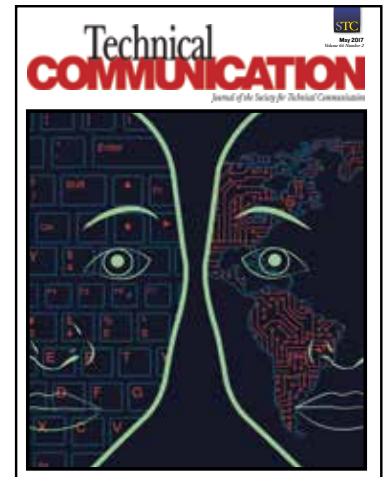
- 141** Crossing the Divide: Implications for Technical Communication User Advocates

Rachel Tofteland-Trampe

CASE STUDY

- 154** Designing for a Culturally Inclusive Democracy: A Case Study of Voter Registration Outreach Postcards in Latino Communities

Lindsay Pryor



DEPARTMENTS

- 89** EDITORIAL
Localizing User Experience: Strategies, Practices, and Techniques for Culturally Sensitive Design

Huatong Sun & Giuseppe Getto

- 95** ARTISTS' NOTES
On the Cover and Honorable Mentions

- 166** TOOLS OF THE TRADE
Special Series Review On Engineering Communication
By Donald R. Riccomini

- 172** BOOK REVIEWS
Jackie Damrau, Editor

ONLINE ONLY TECHCOMM.STC.ORG

- E11** RECENT & RELEVANT
Lyn Gattis, Editor

INSTRUCTIONS FOR AUTHORS

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Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

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Guiseppe Getto & Huatong Sun, Guest Editors

Localizing User Experience: Strategies, Practices, and Techniques for Culturally Sensitive Design

Huatong Sun & Guiseppe Getto



In a world that is rapidly changing due to the political, economic, technological, and cultural turbulences associated with globalization, technical communicators must now contend with new roles as facilitators of not only communication but also cultural fluency and sensitivity. At a time when many aspects of the global economy are in flux, what seems clear is that the increasingly globalized world we're living in is often divided by more drastic cultural differences than we had previously thought, as shown in the recent U.S. presidential election and the UK Brexit vote. However, such turbulences are nothing new for cultural anthropologists and global studies scholars. Almost three decades ago, Appadurai pointed out that the "growing disjunctures" between global cultural flows of people, technologies, economies, media, and ideologies "have become central to the politics of global culture" due to "the sheer speed, scale, and volume" of those flows (1990, p. 11). If anything, the speed, scale, and volume of changes to the way people communicate, use technology, and sustain their local cultures in a global

economy have increased even more dramatically over the past 27 years.

In this special issue, we provide insights and reflections for technical communicators who wish to contend with globalization through local advocacy, with a focus on culturally sensitive design. It is our contention that such practices can help craft user experiences that are sensitive to local cultures while fostering effective communication and sustainable technological development.

Localizing User Experience

As part of the response to such changes as those described above, inquiries surrounding international, cross-cultural, multicultural issues and topics in multiple disciplines (e.g., global media studies, information systems, and human-computer interaction) have long passed the stage when the concept of nation-state is used as a unit of analysis for research (McMillin, 2007; Myers & Tan, 2002; Irani et al., 2010; Sun, 2012) or followed as "a modern, central, political, and economic authority" for practice (Appadurai, 1996). A more fluid structure of global / national / local

is often used as a point of reference. In this fluid structure, each level is mutually constituted.

In the case of technical communication, first, in order to successfully contend with the increasingly globalized, and simultaneously localized, nature of communication, technical communicators can no longer afford to consider their practices as purely local. The design, implementation, evaluation, distribution, and consumption of information products and services happen more often on a global level. In a globalized economy, the ultimate value of an information product or service often depends on its global success. For example, technology "unicorns," or innovative technologies experiencing explosive economic growth, such as Tinder, Uber, Airbnb, and Pinterest, were localized in 20–30 languages in 2015 (Mayorskaya, 2015). In the case of Airbnb, 65 currencies were used in 2016 (Solomon, 2016). The most successful organizations realize that their information products and services must reach a global audience while still localizing these products and services to specific cultures.

Localizing User Experience

Second, technical communicators can no longer consider the local and the global as a binary relationship, as both of them are mutually constituted by each other with the national serving as a connecting point in between—sometimes more global in nature, sometimes more local. In fact, both local and the global are “so closely intertwined that the former is actually one part of the latter” due to “an open, back-and-forth dialogue” constantly happening between them (Sun, 2012, p. 25). Every design is fundamentally local and global, carrying the cultural values, interests, and politics of where it originated from, influenced by the speed, scale, and volume of the massive global flows of resources, technologies, and people that surround it.

The local has thus become the main stage for various negotiations: between creators and consumers of information products and services, and between the cultural values each stakeholder brings with them to these experiences. A big part of what we see and feel comes from our concrete day-to-day experiences in local spaces, since the global reality is fundamentally an imagined reality pieced together through our mediated experience from mass media and globally connected digital network or through our own limited travel and life experiences. As a result, the local stage is actually where our overall global experiences are unfolded and where the global, the national, and the local interact with each other. It’s where “various aspects of globalization take

concrete forms” (Kraidy & Murphy, 2008, p. 440). Therefore, the work of articulation and negotiation surrounding the fluid structure of global/national/local must happen on the local level, such as through user advocacy work that ensures the inclusion of underrepresented users.

Culturally Sensitive Design: Strategies, Practices, and Techniques

The discussion of cultural sensitivity started from the human service disciplines, such as nursing, clinical therapy, and social work where professionals work with culturally diverse patients and clients. Later, it became a widely accepted concept to advocate “a multicultural worldview” which treats cultural minorities “as equals despite their being different” (Band-Winterstein & Freund, 2015, p. 969). Informed by critical theory of technology (e.g., Feenberg, 1999, 2002; Suchman, Blomberg, Orr, & Trigg, 1999; Winner, 1980), culturally sensitive design explored in this special issue is an approach which “is fundamentally founded on a philosophy of technology that believes in ‘cultural variety in the reception and appropriation of modernity’ (Feenberg, 1999, p. 183)” (Sun, 2012, p. 23), with a goal to create “a better future for this global village” (xvi). It is part of the growing body of scholarship on social justice-oriented design and civic participatory design that has been steadily growing within the field of Technical Communication (e.g., Grabill & Simmons, 1998; Crabtree & Sapp, 2005; Haas,

2012; Leydens, 2012; Agboka, 2013; Walton & Jones, 2013; Ding, Li, & Haigler, 2015).

Many puzzling local experiences beg for our thoughtful solutions to address the reality of global cultural diversity, such as the tension between cultural diversity and cultural sensitivity. As we are writing this introduction, the Swedish furniture manufacturer IKEA, which introduced a slogan of “Designed for people, not consumers” in its 2017 ad campaign, has been widely criticized for deliberately excluding photos of women in its local catalogs to Israel’s Haredi Orthodox community and thus creating the illusion of all-male families (Chabin, 2017). IKEA later apologized to the public. But this is not the first time the company had made this blunder, and a similar incident happened in Saudi Arabia five years ago.

What could companies like IKEA do differently in the future? How can our design and communication work both embrace the reality of global cultural diversity while demonstrating cultural sensitivity? What advocacy is required to ensure the inclusion of underrepresented and underserved users? What are strategies, practices, and techniques that technical communicators can utilize that help them embrace, support, sustain, and enrich cultural diversity in this increasingly globalized world? Should we remove all the instances of cultural uniqueness from information products and services in favor of a lowest common denominator

that will strip away any possible harm but also ignore local culture? What level of cultural uniqueness should be added and what should be avoided when a global product or service is localized to a specific market?

These are hard questions to answer, but they are the challenges we as technical communicators must confront. As the roles of technical communicator and user experience designer have begun to blur in productive ways (Redish, 2010; Redish & Barnum, 2011), UX is becoming an essential skill set for technical communicators in a variety of industries and communities. Today's technical communicators are playing an increasingly important role in cultivating cultural humility (Tervalon & Murray-Garcia, 1998) to transform our workplaces, our communities, our society, and our global world. Indeed, at a time with so much uncertainty about the global future, it is very timely to explore how to localize user experiences in this special issue.

As co-editors, we were excited about the spectacular submissions we received about this topic. Moreover, we are happy to see that this issue is made by a mix of established researchers, emerging scholars, and practitioners. It could not be more exciting to envision the future of our field and our designed world with fresh voices and bold minds.

Conceptual Pathways

The first two pieces of this special issue map the conceptual pathways of negotiating the local

and the global when localizing user experiences.

We begin with a reflection on local negotiations for global diversity and advocacy between a researcher and a practitioner. In “Localizing communities, goals, communication, and inclusion: A collaborative approach,” Ann Shivers-McNair and Clarissa San Diego review and reflect on how they cultivated global cultural diversity through the complicated, and often difficult, process of local negotiation in the US and Poland. They call their approach “community strategy,” which centers on social justice and advocacy against the wide background of global cultural flows, with the goal of opening opportunities for “cross-cultural, socially just engagement” for effective communication across differences. Through their collaborative research and practice, the authors found that “diversity is not a global or definite term; it is local and contextual.” They maintain “[if] we are truly committed to globalizing UX and to localizing user communities, then inclusivity and advocacy—as themselves localized practices—should be woven into every part of the process.” Presenting concrete cases in a practitioner-friendly language, they outline four key dimensions of community strategists’ guidelines that many of us could use to guide our negotiations in spite of our own struggles: localizing communities, localizing goals, localizing communication, and localizing inclusion.

“Of scripts and prototypes: A two-part approach to user experience design for international contexts” by Kirk St. Amant introduces a new framework to study the global flow of technology and media: a script-prototype theory approach that addresses the nature of materiality in global design on how creations should conform to contexts. This approach helps organizations to “develop a new, alternative version of the product for audiences in other cultures” by pinpointing the variables of use at work in a particular context of use. It uses script theory (from cognitive psychology) to explore script-based user behaviors in other cultures and employs prototype theory (from linguistics) to decipher the issue of user representation.

Local Negotiation Work on Multiple Fronts

While new frameworks bring new opportunities for technical communicators to embrace global cultural diversity, technical communication researchers and practitioners are also exploring how technical communication expertise can expand into new venues. This includes user experience design work at various sites and on different fronts: in a non-profit language service department, in a community technology center, and in a state election office.

In their “Converging fields, expanding outcomes: Technical communication, translation, and design at a non-profit organization,” Laura Gonzales and

Localizing User Experience

Heather Noel Turner explore a converging process of translation, technical communication, and design for multilingual content development—a change driven by the material realities of global flows and based on their two years of fieldwork in an American non-profit language services office. They call on technical communication practitioners to develop a well-rounded skill set connecting technical communication, translation, and design. Their insightful findings will benefit practitioners and researchers working in and around non-profits and small businesses, many of whom are doing essential groundwork in community building. Furthermore, the design of a study of multilingual content development in a small non-profit shows us the urgency of training a new generation of technical communicators who can “prioritize the needs of their clients while negotiating between multiple roles that require highly specialized knowledge, technology, and products.”

Taking a similar research stance, Rachel Tofteland-Trampe studies the local cultural practices of an American urban community technology center in “Crossing the divide: Implications for technical communication user advocates.” She observes that a big part of the access issue for inexperienced technology users is due to lack of appropriate cultural knowledge and asks designers to reconsider visual design cues and design guidelines developed for today’s webpages. Using the local techniques

developed by technology center tutors as examples, she discusses how technical communication user advocates could help underrepresented users to cross the digital divide and “take a user localization approach to develop more empathic, empowering, and culturally meaningful methods of communication.”

In “Designing for a culturally inclusive democracy: A case study of voter registration outreach postcards in Latino communities,” Lindsay Pryor, a veteran Washington state election administrator, reflects on her experiences of designing two versions of bilingual voter registration cards to reach out to heavily Latino counties. Applying design and rhetorical methods in the field, she employed an instrumental approach to emphasize the convenience of online registration in one version of a voter registration card and used a social approach in another by persuading potential voters through community pressure. The field study that followed showed that these bilingual designs significantly increased voter registration rates in the counties in which they were employed, but there was not a significant difference between the two versions of the design. As part of the “Design 4 Democracy” initiative, this case study explores culturally inclusive UX practices in technical communication design.

A Bigger Picture

As some of you might notice, the original title listed in the

CFP for this special issue was “Globalizing User Experience,” but the special issue you see before you is titled “Localizing User Experience.” We feel this title more accurately characterizes what we face, experience, and are often challenged by as technical communicators working in a global world. It emphasizes that the local is the major site for the negotiation work of technical communicators looking to foster global cultural diversity. Meanwhile, it reflects the current stage of this line of research: It still remains primarily local in terms of empirical research and confined within the Western world. The difficult questions raised earlier in this introduction will not be satisfactorily solved until our methods, practices, and experiences represent a bigger picture of the global.

As more technical communicators engage in the user experience work to embrace global cultural diversity through various forms of local advocacy efforts, indeed, we see new opportunities emerging before us. At a time when the global cultural flow has shifted from a diffusion model to a participatory model (Miller & Kraidy, 2016), more companies will take up the sharing-economy as Airbnb to go global. As a result, more relationship-building work (Ackerman, Kaziunas, & Chalmers, 2015; Getto, 2014; Spinuzzi, 2014; Sun, 2015) will be needed to address the increasing demand for community building on the local level that connects the local and the global. While traditional technical communication jobs

Guiseppe Getto & Huatong Sun, Guest Editors

could be replaced by outsourcing or by robots (Hart-Davidson, Omizo, & Nguyen, 2017), the ability to facilitate communication experiences that span local and global cultures will require human beings capable of deep empathy, wisdom, and cultural fluency.

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Localizing User Experience

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On the Cover

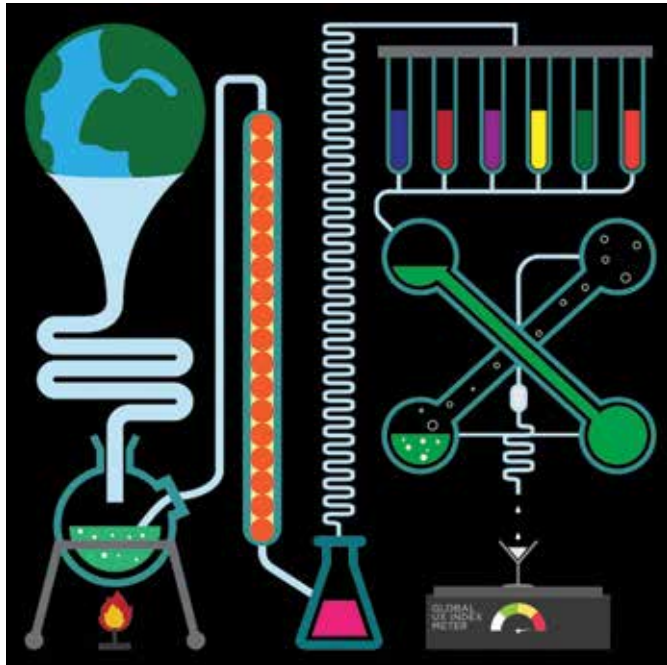


When creating my piece, I focused on the phrase “Globalizing User Experience” and created two heads to represent the people on earth. The two heads can be female or male and could be any race. I leave it up to the audience for interpretation. In the head on the left, I created a keyboard because it ties in with technology, and through technology people around the world communicate. In most cases they use some sort of keyboard. In the head on the right, I created part of the map of the world to represent “globalizing” and within the map I created a circuit board because everyone in the world is connected in that we all make up earth’s population. Everyone around the world communicates in their own way, but most often their user experience is through technology, so in my piece I show the interaction that happens through technology globally.

About the Artist

Makenzie Maddox is an undergraduate student at Kennesaw State University who will graduate with a Bachelor of Arts degree in New Media Arts. This degree incorporates graphic design, illustration, and advertising. Makenzie is motivated to disburse positive messages and enjoys finding inspiration through literary, musical, and other artistic endeavors. She is available at makmaddox47@gmail.com.

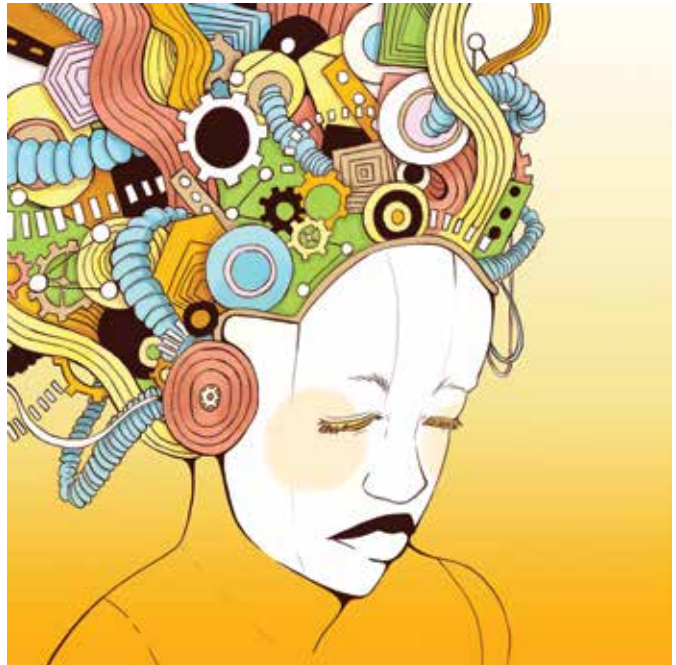
Honorable Mentions



The illustration I created visually represents how UX designers have to keep in mind the cultural constraints of different regions of the world and somehow figure out an aspect of commonality in the product for it to be used across a wide array of cultures. The Earth in the illustration is going through a chemical process where its essence is being extracted through a funnel. The essence then goes through various tubes and funnels and ends up in a glass which is kept in a machine that reads “Global UX Index Meter”.

About the Artist

Mansoor Makba is a student in the Indus Valley School of Art and Architecture in Karachi, Pakistan. He studies in the field of communication design and is extremely passionate about it. He is an illustrator, graphic designer, film maker and musician. He hopes to later pursue a career in advertising. He is available at mmmakba@gmail.com.



To me user experience is a process that the brain does mechanically. It is something that humans do unconsciously and is powered by our individual experiences and intellect. Gears turn within us so that we interact with technology. All around the world users experience technology in different ways. It can be a good experience, a bad experience, or even a neutral one. Either way interaction with the technology is a majestic, complex thing that sometimes is hard to explain.

About the Artist

Ashley T. Sutton is an undergraduate studying New Media Arts at Kennesaw State University. With her New Media Arts degree, she hopes to pursue illustration, graphic design, and animation. She enjoys drawing and conveying powerful messages through her illustrations. She is available at asutto12@students.kennesaw.edu.

Localizing Communities, Goals, Communication, and Inclusion: A Collaborative Approach

Ann Shivers-McNair, University of Arizona and Clarissa San Diego, Makerologist

Abstract

Purpose: The authors, one a researcher and one an international community strategy practitioner, illustrate community strategy work as a multi-faceted localization practice that intersects with user experience design and user localization. We argue that localized community strategy is crucial not only to practice that aims for inclusivity and social justice but also to research and theory building that aims for inclusivity and social justice.

Method: We model a dialogic, localized knowledge-making process that operates at the level of collaborative research between a theorist and a practitioner and at the level of international practice. The authors collaboratively analyzed the experiences of the practitioner, as well as our own collaboration process, and coded them for key dimensions, which can guide and be further developed both in practice and in research.

Results: The authors identify and discuss four key dimensions of a community strategist's localization practices—localizing communities, localizing goals, localizing communication, and localizing inclusion—and illustrate them both in our own collaborative practice of analysis and in the practice of international community strategy.

Conclusion: The definitions of *user*, *community*, and *diversity* themselves must be continually localized in our work to engage across cultures and across theory and practice. We call for further collaboration and research at the intersections of international community strategy work with technical communication and global user experience, particularly the role of localizing diversity and inclusion.

Keywords: community strategy, user localization, diversity, inclusion, social justice

Practitioner's Takeaway:

- Localization, audience analysis, and cross-cultural communication are important practices in our field. Community strategy work supports and extends these practices by emphasizing relationship building and a deep understanding and support of communities. Collaboration among international community strategists, technical communicators, and global user experience researchers—or implementing their combined practices—can lead to more effective communication, more responsive technology design, and more meaningful engagement of communities.
- Practitioners committed to social justice and inclusion can benefit from the practices of and collaborations with community strategists.
- Definitions of *diversity*, *inclusivity*, and *community* in our practice should be products of meaningful, localized engagement, not assumptions we start with.

Localizing Communities

Technical Communicators in Cross-Cultural, Socially Just Engagement

Technical communication researchers and practitioners are recognizing the importance of cross-cultural, cross-contextual engagement in our increasingly globalized work (see, for example, Getto 2014, 2015; Jones, 2014; Herrington, 2010; Starke-Meyerring, Duin, & Palvetzian, 2007). Communicating competently and effectively across geographic and cultural differences demands a skillful and dynamic coordination of audiences, meanings, and technologies: St. Amant and Rich (2015) emphasize the importance of creating and sustaining interactive communities as a means of effectively engaging and communicating across physical and cultural boundaries. Indeed, while our commitment to knowing and engaging our audiences remains foundational to our work, a focus on globalization brings to our attention both the possibility for wider engagement and the need to communicate effectively across differences.

Key to this globalized, cross-cultural work is localization, the practice of contextualizing technologies (Sun, 2006, 2012; Suchman, 2002) and meanings (Gonzales & Zantjler, 2015) in specific communities. As Breuch (2015) explains, drawing on Sun (2012), localization involves “paying attention to the characteristics and needs of a particular culture, population, or even individual” as a way to “resist stereotypical characterizations of culture that may manifest when we think of ‘globalization’” (p. 114). Breuch offers “glocalization” as “an approach that strives to balance both universal (broad range of cultures) and particular (specific cultures) needs and concerns” (p. 114). Both glocalization and localization bring together the shared concerns of technical communicators and user experience researchers: As Breuch notes, to put localization into practice, communication and UX researchers must engage more closely with the people for whom they are designing. A shared concern for engaging audiences and communities is at the heart of the field’s exploration of the expanding definitions of technical communication (Henning & Bemer, 2016), particularly in relationship to user experience (see, for example, Getto, 2014; Lauer & Brumberger, 2016; Redish & Barnum, 2011; Redish, 2010). It is precisely the need for sustained engagement upon which the present study seeks to build and expand. We describe

a collaboration between a researcher (Shivers-McNair) and a practitioner (San Diego) that led to an analysis and articulation of the importance of international community strategy work both to the practice and to the research of localized global user experience and cross-cultural communication, and also to social justice research and practice.

A growing body of scholarship emphasizes the importance of empathetic, social justice-oriented approaches to this cross-cultural, cross-contextual engagement (see, for example, Agboka, 2013; Crabtree & Sapp, 2005; Jones, Savage, & Yu, 2014; Scott, Longo, & Wills, 2006; Walton, Mays, & Haselkorn, 2016). Indeed, social justice research and practice shares with cross-cultural communication approaches a commitment to localizing information and design for specific communities and audiences, with attention to working across differences (see Kerschbaum, 2014), and to building and supporting interactive, dynamic communities. Crucially, social justice work aims not only for cross-cultural communicative competence but also for advocacy and change. Agboka (2013) offers a synthesis of perspectives on social justice that includes “‘advocacy for those in our society who are economically, socially, politically, and/or culturally underresourced’ (Frey, Pearce, Pollock, Artz, & Murphy, 1996, p. 110); ‘communion, cooperation, and liberation (Crabtree, 1998)’; and ‘inclusiveness, dialogue, and passion (Artz, 1998)’” (p. 28). Or, as Jones and Walton (forthcoming) put it, social justice work should be “a collaborative, respectful approach that moves past description and exploration of social justice issues to taking action to redress inequities” (n.p.). Furthermore, social justice concerns encompass not only our methods and practices but also our theories, definitions, and sites of focus. For example, Jones, Savage, & Yu (2014) argue that increasing diversity in the field should change not only the demographics of the field but also the practices and concerns of the field. Grabill & Simmons (1998) and, more recently, Walton, Mays, & Haselkorn (2016) have argued that technical communicators committed to understanding and practicing culturally sensitive social justice work should expand their research purview beyond traditional business organizations to include non-profit and humanitarian organizations.

We build on this work by highlighting the intersections of technical communication, user

experience, and community strategy work through the lens of localized social justice and inclusion advocacy. Indeed, our commitment to social justice in both research and practice shaped the nature of our collaboration and, in turn, our methodology and methods, as we describe below. Following Walton, Zraly, and Mugengana (2015), who present both their research process and their research findings as their argument, we offer both our dialogical collaboration between a theorist and a practitioner and our exploration of the connections between community strategy work, user experience, and localization as our argument for decentralized and localized approaches to the generation of theory and practice. Specifically, we argue that the characteristics of community strategy we highlight here—localizing communities, goals, communication, and inclusion—are at the heart of the overlap of cross-cultural technical communication, global user experience, and social justice work. We begin by defining community strategy, then we illustrate its multi-faceted localization practices in theory-building and in practice. We conclude with a discussion of the limitations of our study and possibilities for further collaboration and practice.

Intersections in the Practice of Community Strategy

We chose to use the term *community strategy* because it is how San Diego, a practitioner, describes her work and because we want to emphasize how essential both community and strategy are to the work. Following researchers like Spinuzzi (2015) who note the rise of all-edge adhocracies (dynamic, rhizomatic, nonhierarchical organizations), we illustrate community strategy as an adhocratic practice that exceeds the scope of a traditional bureaucratic organization. We describe community strategy in terms of the practices it shares with technical communication and user experience, particularly listening (Breuch, 2001), responsiveness (Long, 2014), and audience analysis (Ross, 2013), in addition to localization, in the hopes that more collaboration and research will carry forward these fruitful intersections and complementary practices.

At its most abstract, community strategy is bringing people together in ways that center shared goals through localization. Specifically, community strategy bridges developer localization, which Sun (2012) defines as “the

localization work occurring at the developer’s site that we commonly refer to when thinking of localization,” and user localization, which is “energetic user efforts of using a technology within meaningful social practices and incorporating the technology into one’s life” (p. 40). To connect developers and user communities, San Diego draws on her knowledge and experience in hardware and software—one example is in her producing a tutorial that implemented a past employer’s microcontroller along with coding instructions for a simple solution for finding a phone set on silent for hackster.io, an online community focused on hardware. She also organized the DevRel Summit, a one-day conference featuring talks and workshops focused on professionalizing and supporting people who work in developer relations (which involves connecting platform and API providers with developer communities). As a cofounder of a makerspace in Seattle, for example, San Diego focused on assembling a team with different and complementary skillsets (in hardware, software, and management), experiences, perspectives, and identities, and she focused on leveraging those team members’ networks and skills to connect with local communities. And as an advocate for inclusivity in technology industries, San Diego works to create online and in-person communities of support—be it a Slack channel for people of color in hardware and software industries around the world or a Women Who Code meet-up in Seattle.

The focus on communities and their goals is also why we prefer *community strategy* to a term like *growth hacking*, though, again, community strategy can certainly include growth hacking. In addition to the resistance to the term growth hacking San Diego has encountered from colleagues in software and hardware development (who are concerned about who and what is being hacked), we also note that growth is not always the desired or best outcome for the developer, provider, or the community. Community strategy emphasizes the localized nature of outcomes and the importance of tailoring both the nature of the engagement and the measure of that engagement’s success to the community, rather than imposing a set of goals or assumptions. Localization of engagement is another point of connection between community strategy and global UX, especially, which, as Quesenberry and Szuc (2012) emphasize, demands that assumptions be laid bare and open to change based on deep, immersive knowledge of a user community.

Localizing Communities

The emphasis on strategy in the name *community strategist* highlights the skills involved in building relationships, connecting complementary differences, and localizing developer and community goals. Indeed, a community strategist cultivates a global network of people with diverse skills, identities, and experiences, covering a range of organizations, cultures, languages, and geographical locations, in order to be able to wield that network effectively for specific purposes—whether it is connecting a Polish data science company with niche U.S. markets, or connecting a person of color who may feel alone in his workplace with a community of other people of color in working in technology.

Furthermore, the tactics a community strategist employs are rhetorical and user-centric, and the community strategist, like technical communicators and user experience researchers, plays an important role in the user localization process. The product may no longer be in its initial development by the time the community strategist is involved, but the community strategist helps an organization anticipate and facilitate user localization processes, which, in turn, can lead to refining not only marketing and technical materials but also the product or service itself as well as organizational practices. Technical communication is important to community strategy, whether it is writing a DIY tutorial for a product to engage online communities or localizing Web content for a niche market.

Likewise, user experience is important to community strategy: the community strategist's goal is to create a positive, useful first experience (rather than merely a first impression), and the strategist carefully creates environments and situations for that initial experience, drawing on rhetorical knowledge of the community. Like UX researchers and technical communicators, community strategists intervene rhetorically in the complex nexus of markets, technologies, developers, and communities. Murray and Ankerson (2016) analyze the challenges faced by the developer of a lesbian dating app in balancing user preferences with funding demands. Specifically, lesbian users desired a distinctly queer and slow mode of temporality (not rushing to a hookup, in contrast to gay apps like Grindr), but the startup world and capital providers demand quick pathways to traditional revenue generators like matching, chatting, and meeting up with other users. While Murray and Ankerson do not mention a community strategist in

their analysis, the challenges they describe are precisely those that a community strategist is well positioned to navigate, along with UX researchers and technical communicators. As Lauer and Brumberger (2016) point out, rhetorical skills are as essential to user experience as creativity.

Finally, an ability to work empathetically and effectively across differences—not only race/ethnicity, gender, class, sexuality, language, culture, and ability, but also skill sets, goals, and situations—is at the heart of community strategy, much like technical communication and user experience. Social justice and inclusion advocacy are central to the work of community strategy, and we would argue that they are also central to the work of globalizing UX. As a Filipino-American woman who grew up in poverty in Oakland, California, San Diego is aware of and strategically wields her embodiment of diversity in technology as a way not only of demonstrating the importance of inclusion but also as a way of supporting others who are marked as different. She draws on her own experiences of working across cultures and differences to help companies, organizations, and developers do the same, and key to this work is treating inclusion itself—like the communities, technologies, and goals—as a localized practice. And even when a client's goal is not explicitly to reach or include “diverse” communities, San Diego's own commitment to cultivating diversity—in many different forms—in her networks and contacts means that a broader, more inclusive reach is embedded in her work, which can ultimately benefit both her client and the communities she connects. If we are truly committed to globalizing UX and to localizing user communities, then inclusivity and advocacy—as themselves localized practices—should be woven into every part of the process. Furthermore, just as Breuch (2015) argues that globalization “need not be limited to international contexts, businesses, or designs” and “can inform our understanding of cultural differences within regional and national boundaries” (p. 114), we argue that these characteristics of community strategy are scalable from local to international contexts.

Because our approach to collaboration is as much a part of the exemplification of community strategy as San Diego's professional and advocacy practices, we present a detailed description of our collaborative process in the hopes that other theorists

and practitioners may find it a useful model. We then present our analysis of San Diego's professional and advocacy practices. Specifically, the two facets of our analysis cover 1) our own collaborative work in six collaborative sessions over the course of nearly a year, and 2) San Diego's experiences (with examples drawn from her freelance international community strategy work, her work with the international organization Women Who Code, and her role cofounding a Seattle makerspace, all over the course of two and a half years).

Localizing Researcher and Practitioner Communities and Goals

Our collaboration began when Shivers-McNair interviewed San Diego (via Skype) for an ethnographic study of the Seattle makerspace San Diego cofounded. San Diego had moved from Seattle to San Francisco when Shivers-McNair began her study of the makerspace. Shivers-McNair asked San Diego about diversity and representation in the makerspace, since there were no women and relatively few people of color who were regulars in the makerspace, despite San Diego's efforts to advocate for diversity and inclusivity before she moved. San Diego remarked that simply declaring an intention to be inclusive was not enough, and that it was important for people to see someone like themselves—for example, another woman, another person of color—in a space.

At this point, what had begun as a semi-structured ethnographic interview turned into an energetic discussion of issues of diversity and inclusion in the maker movement and in technology industries, since we had both been thinking about and observing these issues from our different perspectives as a researcher and a practitioner, and as a white woman (Shivers-McNair) and a woman of color (San Diego). We both articulated that these were issues we wanted to write about, both for academic and industry publications, and we agreed to collaborate and keep thinking and talking about inclusion, access, and social justice. Over the course of nearly a year, our ongoing, collaborative analysis revealed to us four key dimensions of community strategy practices: localizing communities, localizing goals, localizing communication, and localizing inclusion. While we initially identified these dimensions in our interpretation of San Diego's work as a practitioner, we realized they also applied to our knowledge-making collaboration.

Over the course of the next few months, after our initial conversation, we explored, in periodic, brief conversations held over Facebook Messenger, what diversity means, and we quickly established that diversity is not a global or definite term; it is local and contextual. We also began drafting a research plan to explore these issues for an academic study, with additional deliverables for other professional and community-focused venues, because we wanted our collaboration to support theorists and practitioners both through national and international publication venues and through local interactions. San Diego returned to Seattle, and we began meeting in person to generate data for our collaborative case study of her work as an international community strategist and inclusion advocate. At the first of our in-person meetings, Shivers-McNair took up a more-or-less traditional researcher role, asking open-ended questions about San Diego's experiences, practices, and goals as a community strategist, and recording her responses (via audio-recording and typed notes). The conversation tacked between specifics of experience and the principles and logics behind those experiences.

The following questions were generated in Shivers-McNair's interview of San Diego about her role in the makerspace she cofounded, and they became more and more specific over the course of multiple conversations and collaborative analysis. Some of the broader questions were revisited to fill in more information.

- What is community strategy?
- How do you define diversity and social justice?
- How did you get into community strategy?
- What are your goals as a community strategist?
- How do you connect with potential clients, particularly international ones?
- What is your process for international consulting?
- What information and communication technologies (ICTs) do you use, and how and why?
- How do you frame your services and relationships with clients (in terms of length of time, scope, etc.)?
- How do you connect with meet-ups in your clients' target markets?
- How do you follow up with or stay in touch with people at the meet-ups?
- How do you balance your passion for diversity advocacy with the goals of your clients?

Localizing Communities

Most broadly, we were working to define international community strategy in relation to global UX, technical communication, and social justice advocacy. While our initial goals were focused on our respective researcher and practitioner communities, our collaborative localization work brought both our goals and communities together. For example, San Diego connected Shivers-McNair with other practitioners in the Seattle area, and San Diego facilitated a discussion and workshop in Shivers-McNair's undergraduate technical communication course at the University of Washington.

Localizing communication between researcher and practitioner creates a dialogic framework for data generation and analysis

Just as San Diego advocates for combining both in-person and online engagement in her practice (as we discuss further below), our collaboration made strategic use of both in-person conversations and technology-mediated co-analysis and co-writing. After our first in-person meeting, Shivers-McNair transcribed the conversation and created a shared document with San Diego. In that document, Shivers-McNair conducted a quick, loose initial coding similar to the first step of grounded theory, as Charmaz (2006) describes it. Following an in vivo coding practice (Saldaña, 2009), Shivers-McNair underlined phrases that San Diego had emphasized as important or that were repeated or appeared to be part of a pattern or theme. We met again to go back through the notes, to fill in more data and information, and to discuss the emerging themes and categories. The bolded phrases below represent attempts at initial categorizations that were as much intended to generate more discussion as they were to analyze. The underlined and bolded phrases are extracted and represented here in list form, but at the time of analysis, they were annotations to the original transcription in our shared document.

Community strategy work/ Strategist-as-ambassador

- Strategist – you can't just get a bunch of people together; there needs to be complementing skill sets, understanding the types of people needed to get stuff done
- Marketing
- Outreach to communities with less access to tech
- Find someone else in another city who wants to do the same thing, then build structure to make it easier for others.

- Trip to Europe this year: audiences, you actually need a niche audience; I help them get into the U.S. market, being a representative, helping them understand that because there are so many different types of markets to start off. People need to be open minded, trust that I knew what to do in order to get them there.
- You have to understand community and who you're serving.
- Being face to face gives them a more substantive relationship that can't be recreated online.
- In-person demo helps you control the temperature of how it's received.
- Strategy is important – you have to understand when to bring people in.
- As a strategist, you have to know what's out there.
- The more you're exposed to communities, the more you realize what you can contribute to communities.
- You want to be able to resonate with their end user, that's not a technical thing, that's a human thing.
- You want to respect the community.
- You need to walk through things to see if the next step makes sense; even if you know what's ahead, be patient and understand where people are coming from in terms of execution.
- Making connections: In communities, you're doing this because you want to learn, you don't want to fail your team, but you're also exploring.

Diversity (in tech, in networks; defining)

- This highlights an important thing: there are groups out there who aren't trying to limit diversity, they just don't know how to make it happen. Trusting me was the best thing they could do.
- That's why diversity is so important in tech. Not just color of skin, but age, class, upbringing all in play. Everyone wants to see resonance somehow. Seeing someone like you.
- This is something I'm constantly thinking about, especially because it's not always feasible in some places. How do we help allies succeed? How do we open that up? Perceived leaders/influencers should be the ones adding their voices.
- What's even more important is keeping women IN tech; numbers show women in tech are dropping because we're not getting the environment we need to thrive.
- Understanding all these different types of groups in the hopes that one day we will find common ground.

Technologies/online tools for strategists

- Translating websites into demographic-specific U.S. English.
- Hardware/software.
- Any type of community management or strategist – another language they need to be able to speak is online, communicating in blogs, Slack, social media. Still dependent on human moderation. For me it was just using it.
- Make technology use contextual.

In a follow-up meeting, San Diego then took Shivers-McNair's initial loose coding and generated a more concise, prioritized list of core practices, which we then began connecting back to the data, and which prompted more data generation. The following categories and subsets emerged in a follow-up conversation, during which more examples and analogies were also generated. We began to envision these as potential sections of our discussion.

After another conversation that included more data generation and simultaneous analysis (particularly

in thinking through relationships between practices and experiences and abstracting principles), as well as discussion of a working outline for the manuscript, we saw that localization was common to all the categories and realized that our categories were, in fact, dimensions of a community strategist's localization practices. We also divided the "relationships" category into "localizing communities" and "localizing goals" to better represent the complexities of those processes. We also revised "localizing diversity" to be "localizing inclusion" to emphasize the active nature of inclusion.

Localizing inclusion in social justice research means writing with, not about

We see the collaboration of a researcher and a practitioner as central to our method and our methodology (by which we mean the logics and principles behind our approach to the study). A researcher-practitioner collaboration offers three important affordances for knowledge-making. First, by including a practitioner as co-creator of the data and the analysis and interpretation, we take up

Table 1. Categories and subsets of core practices

Diversity (localized)	Relationships	Tools/technologies
gender	making connections	human/in person (meetups, networks, feedback in person)
race	being an example/visible (also diversity)	digital/online (Slack, hackster.io, Google slides, email, twitter)
age	mentoring (also diversity)	hardware (microcontroller, laser cutter)
class	listening, asking how can I help	
skills	respecting	
interests		
markets		

Table 2. Revised categories and subsets of core practices

Localizing communities	Localizing goals	Localizing communication	Localizing inclusion
making connections	listening to and respecting community	balancing face-to-face and online engagement	including more people, broadening beyond the "usual" (white male/ privileged) channels
bringing people together strategically	bringing community and client goals together	localizing first experiences	diverse networks lead to diverse connections and users for clients
making/materializing networks	research heuristic	localizing technologies for outreach	mentoring and support structures for sustainability
			embodying/seeing resonance

Localizing Communities

Blyler's (2004) call to decentralize researcher authority in the hopes that our goals and findings will be more useful—both for researchers and for practitioners, as Grabill (2012) advocates. In this way, we are moving beyond the traditional member check or participant check approach, wherein results of analysis are presented to participants for confirmation, and toward the transformative data analysis model described by Alsop (2010), wherein the researcher maintains open communication with participants throughout the process with the goal of reciprocity, as a strategy for social justice research that can support the flexibility and reflexivity described and advocated for by Jones (2014). Like Koelsch (2013), we treated member checks as part of the data collection process, not simply as a validity measure at the end of the analysis, and this transformed our relationship from researcher and participant to researcher and practitioner as co-authors.

Second, the balance of insider and outsider perspectives enriches the analysis of the data, as Walton, Mays, and Haselkorn (2016) demonstrate. Mays provided an insider perspective and entrée to the humanitarian culture being examined; Walton and Haselkorn provided an outsider perspective. In our study, San Diego provided an insider and practitioner perspective, while Shivers-McNair provided an outsider perspective. More specifically, San Diego's experiences are the data for our case study, but equally importantly, her insights into the values and practices of community strategy were key to our collaborative analysis, particularly in generating and prioritizing categories. Shivers-McNair drew on researcher practices like open-ended interviewing to structure the data generation and collection and also drew on a grounded theory (Glaser & Strauss, 1967; Corbin & Strauss, 2014) approach to collaboratively analyzing the data.

Third, and finally, we believe that embracing and accounting for the messiness of researcher-practitioner collaboration is essential for research and work toward globalizing UX, particularly since, as Quesenberry and Szuc (2012) point out, global UX increasingly requires teamwork that connects researchers (academic and professional) with local practitioners. Walton, Zraly, and Mugengana (2015) and Fleckenstein, Spinuzzi, Rickly, and Papper (2008) call for transparency about not only research phenomena but also the often-messy processes by which we arrive at phenomena. Thus, we account here for our knowledge-making process, from

the formation of our collaboration to the generation of data to the analysis, interpretation, and presentation of the data. In what follows, we turn to the second facet of our argument: international community strategy in practice.

Localizing communities across geographic and cultural boundaries involves networking and net work

In an age of all-edge adhocracies (Spinuzzi, 2015) where professionals rely increasingly on their own dynamic, highly connected (but also highly permeable) networks instead of the structures of a traditional, hierarchical company, cultivating a global network of individual and community contacts that can be localized for specific clients and purposes is an essential practice. This networking practice, which is central to community strategy, complements and meshes with the aims of technical communicators to construct networks, which Read and Swarts (2015) describe as a “working, coordinated configuration of actors in a setting that affords such a configuration” (p. 15). And as Read and Swarts' definition suggests, networking is a localized practice. In this sense, a community strategist is continually seeking out individuals and communities. These connections are grounded in shared interests and experiences, with the understanding that future opportunities may present themselves to recontextualize those connections for a new purpose, as in Getto's (2017) articulation of “user experience design as a form of networked rhetorics” (p. 15).

Meet-ups are central to San Diego's community strategy work because they allow her to connect with existing communities and facilitate connections across communities. For example, San Diego's involvement in the Seattle chapter of the global organization Geek Girls Carrots—which focuses on attracting women to and supporting them in technology industries, and which hosts meet-ups—led to her making connections with the chapter in Warsaw, Poland, which in turn led to San Diego visiting Warsaw for what she calls a working holiday. There she attended a local start-up meet-up and met people looking to expand their software solutions company into U.S. markets. After a follow-up meeting to discuss goals, and during which San Diego advised the potential clients to focus on their data science service for U.S. markets, the company contracted San Diego for international community strategy services.

Connecting and localizing communities and networks is a material practice, both in the sense that it has material effects and in the sense that the connections involve articulations of both humans and nonhumans (like infrastructures, technologies, and documents), as Read and Swarts (2015) have observed. San Diego observes that her experiences growing up in a low-income neighborhood taught her to be resourceful: Without access to capital, relationship-building was key, because it facilitated bartering with more than money and honed her ability to understand value as localized in particular moments in particular places for particular people. And in connecting provider companies with meet-ups, she uses her physical presence, textual and visual rhetorical elements (usually a presentation), and (depending on the product) physical objects to localize and materialize—both in an economic sense and in a physical sense—network connections between designers/providers and users/communities. But the users of one day's network may become the providers of another day's network, which is why we prefer the term *community* to *user*—to emphasize ongoing connections and relationships even as roles of user, designer, and even strategist change or evolve in different interactions.

But the nature of the connections and networks assembled is crucial. A community strategist, much like a technical communicator, expertly and carefully assembles people, texts, knowledge, information, and things in complementary ways to accomplish a goal. Long (2014) points out that, for technical communicators, responsiveness to those engaged is a rhetorical art that resists routinization. Similarly, a community strategist's work centers responsiveness. By cultivating a careful knowledge of the skills, experiences, and strengths of the people, systems, and technologies she knows, San Diego is able to materialize networks with complementary strengths and goals. Furthermore, because she is concerned about sustainability beyond her own involvement, her work to materialize networks involves attention to creating network infrastructures—not only assembling complementary strengths and goals but also creating precedents for effective communication, organizational, and interactional practices.

Localizing goals across communities requires rhetorical skills

As an intermediary between designers/providers and user communities, a community strategist—like

technical communicators and user experience researchers—practices listening (Breuch, 2011), responsiveness (Long, 2014), and audience analysis (Ross, 2013), both for clients and communities. San Diego prioritizes listening to and respecting the goals of communities, because meaningful engagement and support of communities is foundational to successful community strategy. Ultimately, her work involves localizing the goals of both communities and providers through careful listening, understanding, and connecting. San Diego relies on the following heuristic for learning about the goals and interests of the people she meets:

- What brought you [here]?
- How do you know [person]?
- How did you hear about [event]?
- What do you want to get out of [event/talk]?
- How can I help you?

Sometimes San Diego moves through this heuristic fairly quickly, as in the case of a conversation with a potential user at a meet-up. But when she is working across cultures, she emphasizes time and observation, in addition to listening, as key to generating meaningful cross-cultural, cross-community understanding, just as Quesenberry and Szuc (2014) emphasize immersion (as opposed to research, which suggests a more limited engagement) as key to globalizing user experience. The last question, “how can I help you?” is how the community strategist begins to connect her understanding of a person's or community's needs or interests with her own resources and the resources—human, technological, informational, infrastructural—in her networks of connections. For example, San Diego's Warsaw client is a software provider with many services and products, which she learned is typical of and successful in the Polish market. But because their goal was to expand into the U.S. market, which is more competitive, San Diego encouraged them to focus, at least at first, on data science. She then asked them to identify three industries their data science service could support, and, finally, she gathered information about that service that would help her localize the service for each particular industry in her presentations at various industry-specific meet-ups.

However, the answer to “how can I help you?” may not always involve making immediate provider-user connections. For example, San Diego connected

Localizing Communities

online with a community in the Philippines that is using microcontrollers to improve conditions in their villages, where they face difficulty in obtaining basic electronics, even light bulbs, for their communities. San Diego's primary goal is to learn more about what these communities are doing, then consider how access to technology (in this case to hardware) could improve quality of life, in the hopes that by connecting these communities with resources and suppliers in her own networks (which are primarily US-based), she could help the communities build better infrastructures and carry out their projects on a larger scale. But even if the communities' goals are to build something that does not immediately require connecting with investors or suppliers in San Diego's networks, she commits to respecting and helping with their goals.

Localizing communication involves both in-person and technology-mediated interaction

One of the most important services San Diego offers as part of her community strategy work is giving face-to-face product demos at local meet-ups in the target market. These face-to-face interactions are perhaps one of the most concrete ways in which she localizes communication between companies and communities. Since the Warsaw software company was interested in U.S. markets, San Diego offered them a choice of the four U.S. cities in which she has extensive networks: Seattle, San Francisco, Boston, and New York. San Diego emphasizes face-to-face engagement at meet-ups because it allows her to connect the product with communities of potential users in a way that aims to establish a mutually beneficial relationship between the community and the company from the outset. The meet-ups are identified because they represent industries and interests already aligned with those of the company, and San Diego offers to give a presentation that addresses the meet-up's interests and connects the product demo to those interests, since many meet-ups are looking for speakers for their events.

The face-to-face interaction also helps San Diego rhetorically shape what she calls the *first experience* (rather than first impression) by connecting the product to the goals of the meet-up, by creating a positive environment for a first experience of the product, and by positioning herself as an empathetic advocate on behalf of potential users when they have concerns about the product's usability. The first experience is an

important part of the mutually beneficial relationship that the community strategist can build: When the interests and experiences of the community of potential users are centered, the community can benefit from the application of a product—in the case of the Warsaw company, data science—for a specific need or problem, and the provider company can benefit from ongoing user research facilitated by the community strategist acting as a user advocate. As user researchers well know (see especially Sun, 2012), particularly at the international scale, a feature that works in the local user community may not work or resonate in international contexts. A community strategist's ongoing responsiveness to communities of potential new users can help companies save time and face in addressing issues before a full international launch.

But the community strategist's work of localizing communication also includes media for online engagement. In addition to facilitating face-to-face demonstrations, San Diego also helps her clients revise their websites to be more rhetorically effective for specific communities. For example, San Diego helped her Polish client re-translate their English-language product site into more demographic-specific U.S. English. In other words, while the work of translating from Polish to English had already been done, which, as Gonzales and Zantjler (2015) demonstrate, is already a process of user localization, San Diego helped further localize that translation by attending to the particular lexis of a specific English-speaking U.S. demographic. Still, though, we note the limitations San Diego, who is not fluent in Polish, experienced in re-localizing the already-translated materials. San Diego knew enough about her clients' communicative practices to sense how nuanced and context-specific meanings were, and she knew to keep asking questions to make sure she was getting at those nuances as she re-localized the translated text, but she wishes, in retrospect, she had done so even more. We note, furthermore, that our analysis led us to resolve, following Gonzales and Zantjler (2015) and Walton, Zraly, and Mugengana (2015), to seek out opportunities to include, and to highlight the work of translators in community strategy.

Rather than imposing a standard set of information and communication technologies (ICTs) for her work, San Diego adapts to the ICTs preferred or already in use by the clients and communities with whom she works. For a hardware provider, San Diego wrote a

tutorial for using the provider's microcontroller to serve as a solution for finding a misplaced mobile phone by having it play music, so that even if the phone's ringer is off, the phone can still be heard and located. She published the tutorial on hackster.io, a popular international forum for people interested in hardware, which is an established medium for localizing hardware technologies. But she was also attuned to the opportunity to connect the provider's goals of connecting with new users with her own goals of engaging more people in hardware: She designed and wrote the tutorial with first-time or novice users in mind and was pleased when novice users commented that they had successfully implemented the code and appreciated the usability of her instructions.

Localizing inclusion against challenges of access requires intentional mentorship

San Diego is a passionate advocate for inclusion in technology (both in industry and in community access), and her commitment to social justice permeates her work as a community strategist (and, therefore, the previous three dimensions we have described). Central to her advocacy practice is continually localizing inclusion itself—specifically, the definition of diversity and social justice outcomes. While there are certainly issues of diversity and social justice—for example, representation of women in technology industries, or access to hardware and software technologies in what Agboka (2013) calls unenfranchised communities—that transcend local circumstances, we emphasize that the approach to inclusion is localized. Furthermore, while organizations may have representation from people of diverse backgrounds, identities, and abilities, this does not mean that those people are made to feel welcome; inclusion is an active localization practice that includes whether or not diversity and difference is explicitly named and in what ways, as well as whether or not the advocacy comes from a community, the community strategist, a client, or some combination of these. Key to this work is exploring local contexts and balancing one's own commitment to advocacy with the goals and commitments of the communities engaged, which, in turn, can lead to sustainable progress toward not simply describing but redressing inequities, as Jones and Walton (forthcoming) advocate.

San Diego recognized that one of the problems with diversity and access in technology industries is that the

channels companies use to recruit employees, users, and communities are the “same old channels”—including, for example, predominantly white U.S. universities, or predominantly male meet-ups or special interest groups. A community strategist can intervene in this potential feedback loop by including more channels to more communities, especially those underrepresented in technology industries. San Diego leverages the diversity in her community relationships to make meaningful connections that include more voices, identities, experiences, and perspectives. Even when a company's explicit goals do not involve increasing diversity in its user communities, San Diego connects her own, more diverse networks as part of her strategy work. The Polish data science provider, for example, was defining diversity in terms of international markets: specifically, in crossing cultural, geographic, and linguistic boundaries by reaching U.S. markets, both digitally and in person. San Diego, in turn, further expands (and simultaneously localizes) the work of inclusion through her own networks, which are diverse from both U.S. and Polish technology industry perspectives, and by being, herself, what she calls a “face of diversity.” In this way, a localized practice of diversity and inclusion advocacy can benefit both companies and communities.

Indeed, we emphasize the importance of a “show, don't tell” approach to localizing and supporting inclusivity. As we discussed and reflected on San Diego's work cofounding the makerspace and the fact that after she left, there were fewer women and people of color involved in the space, we realized that while the intention of the makerspace to be inclusive remains unchanged, what has changed is that San Diego herself was no longer prominently visible in the space to *show* diversity and inclusivity in practice. San Diego notes, furthermore, that she wishes she had taken pictures of women and people of color involved in the makerspace to include in the organization's web and social media pages as a way of showing inclusivity beyond telling or proclaiming an intent to be inclusive. When San Diego is in a position to make increased inclusion an explicit goal—for example, in her work organizing conferences like the DevRel Summit in Seattle—she is careful about how (or if) she explicitly names the diversity she is working toward. Since her goal was to recruit balanced representation of men and women at the DevRel Summit, she chose not to explicitly name it a women-focused conference, because she has found that

Localizing Communities

naming the conference that way leads to extremely low attendance by men. Instead, she made sure to advertise the event to channels that reached both women and men, and she recruited women and people of color to be speakers and leaders for the event.

As a result, women and men were nearly equally represented in the 500 conference attendees, and a male developer relations professional who attended the event wrote in his review: “While the tech industry tends to be overwhelmingly white and male, the selection of presenters wasn’t. When you factored in the panel compositions, there were more women on stage during the day than there were men, yet there was never a feeling that this was a conference about women or for women. It was simply a professional conference that just happened to have more women on stage. That was cool” (Bulmash, 2016, para. 3). In her work with Women Who Code, San Diego has found that the fact that the word “women” is in the name of the group has sometimes led to sponsorships and partnerships that have felt more tokenizing than meaningful. The potential for tokenization has prompted San Diego and her colleagues to begin articulating guidelines for meaningful relationships, which they plan to start by highlighting the inclusive practices of a partner organization they hold in high esteem. At the same time, as we were analyzing this experience, San Diego realized although she and her colleagues had successfully fostered diversity in gender and ethnicity, they had missed an opportunity to reach out to older audiences. In some ways, the conference was focusing its outreach on people who were already inclined to agree and have similar perspectives, while missing the experiences and different perspectives of diverse age groups. If the goal of a community strategist is to foster a self-sustaining community, then creating an ecosystem with diversity in demographics and experience is essential.

Just as fostering diversity in demographics and experience is important to the sustainability of a just community, mentoring is crucial both to localizing and to sustaining social justice work, specifically, and community strategy work in general. Some of this mentoring work is directly connected to the contracted work of a community strategist: To sustain the relationships and networks she materializes beyond her own direct involvement, San Diego mentors organization and community members to carry on the work of strategically assembling and connecting

human, technological, and material resources across cultures. Mentoring is particularly important in groups who want to be more inclusive and diverse but are not sure how to go about making meaningful and sustainable changes. If, for example, the goal is to include more women, more people of color, or more people with disabilities, then San Diego emphasizes the importance of having women, people of color, and people with disabilities at the center of that strategy work and asking them how to reach out meaningfully and trust and support them. But at the same time, she also emphasizes the intersectional nature of diversity: It is never just gender, just race/ethnicity, just class, just ability, just geography but rather the intersections of all of these, which means that including and listening to many bodies, voices, and perspectives is crucial for finding resonances amid differences.

Other aspects of this mentoring work happen outside of official business: For example, San Diego is in a Slack group for underrepresented groups in technology industries founded by a friend in the Bay Area. The goal of the group is not only to support each other, through regular posting on channels like #todayimade, but also to mobilize the group to be public examples of diversity by, for example, connecting with others to attend local events together. Informal, ongoing mentoring and outreach, in turn, strengthens the ongoing community building and community connecting work that is at the heart of community strategy.

Limitations and Possibilities for Further Research and Practice

Just as Gonzales and Zantjler (2015) observe that localized translation practices are layered, multiple, and built over time, our analysis suggests the same is true of the user (or community) localization practices of a community strategist. As our results indicate, these four dimensions—localizing community, localizing goals, localizing communication, and localizing inclusion—are overlapping and intersecting dimensions, not only within the work of an international community strategist but also across the work of community strategy, global UX, and cross-cultural technical communication. These overlaps and intersections present both opportunities and challenges.

We emphasize that the methodological process by which we arrived at our findings is itself an opportunity

for further investigation and collaboration across research and practice, as well as across cultures. The process of transforming the traditional qualitative interview-analysis-member check model into a collaboration that entwines data generation and analysis is itself a localization: It emphasizes the particularity of our shared understandings and experiences in the same way that localized UX emphasizes the particularity of language and culture in different communities' experiences (Schumacher, 2010). Certainly this particularity is a limitation to our study: Our dataset is limited to the experiences of one practitioner, and the specific experiences of community strategy are not intended to be generalizable to all or even most community strategists (and global UX researchers and technical communicators). However, just as Sun (2012) reminds us that user localization "emphasizes the contributions users have made to a technology's design process in participatory culture" (p. 41), we argue that our collaborative method is a way of accounting for a participatory approach to research. Just as Getto (2014) advocates for localizing methods, we suggest that our method itself, as well as the key dimensions we found, can be taken up and re-localized in other contexts. In this way, we envision the possibility of a dynamic, cumulative, global potential from these ongoing re-localizations of both method and findings.

Relatedly, we note that technical communicators, user experience researchers, and community strategists are well positioned to support each other in intervening in effective and culturally sensitive ways in iterative design and localization processes. To return to Sun's (2012) distinction between user localization and developer localization, we note that the community strategist bridges users, communities, developers, and providers. This bridging work can occur at many points in the iterative design and localization process. Sometimes the community strategist is the bearer of bad news to developers and providers, when a user community does not respond to a feature in the ways developers had hoped, and sometimes the community strategist participates in the making of a community or in a community's work toward a goal. Even the term *user* is highly relative in this work: Sometimes developers are users, sometimes communities are users, and sometimes communities are comprised of developers and users. We are reminded of Potts' (2014) preference for the term *participant* over *user* to

emphasize the importance of participation in systems; for a community strategist, both *community* and *participant* are vitally important and also dynamic.

However, such dynamic approaches can be accompanied by the challenge of justifying often non-quantitative and even non-quantifiable engagements that require different metrics from traditional revenue-based measure. The metric of success in community strategy is not always quantifiable in growth. The primary goal of community strategy is to identify personalities and groups that work well together, both in and across communities, which can lead to growth. But not all communities need to grow, or grow as much as others, to fulfill their purpose. Community strategy goes beyond a more directly revenue-oriented objective to emphasize relationships, which can, in turn, benefit both communities of users and providers, but this is not always recognizable to clients and companies as measurable success. San Diego, Persing, and Fifield (2016) offer recommendations to community strategists for articulating value added to companies that resonate with the recommendations of Redish (2010), Redish and Barnum (2011), and Lauer and Brumberger (2016) to technical communicators for articulating their value to UX work. Notably, both sets of recommendations involve constantly localizing value—in the same way that community strategists, like technical communicators and UX researchers, are constantly localizing goals. This means listening to stakeholders, having a range of strategies and approaches that can be flexibly reshaped or even abandoned, and making rhetorically responsive cases for the importance of community strategy to the iterative design and localization process.

User localization, audience analysis, and cross-cultural communication are important practices in our field. Community strategy work supports and extends these practices by emphasizing relationship building and a deep understanding and support of communities. The main argument of this article is twofold: first, that the multifaceted localization practices of community strategists intersect with and are integral to user experience and user localization processes, and second, that collaboration—between researchers and practitioners, and among community strategists, technical communicators, and user experience researchers—is itself a localization practice that can support design, engagement, knowledge-making, and social justice work.

Localizing Communities

Collaboration among community strategists, technical communicators, and user experience researchers—or implementing their combined practices—can lead to more effective communication, more responsive technology design, and more meaningful engagement of communities. Researchers and practitioners committed to social justice and inclusion advocacy can benefit from the practices of and collaborations with international community strategists. Crucially, definitions of *diversity* and *community* in our research and practice should be products of meaningful, localized engagement, not assumptions we start with. Inclusivity is more than simply having people of diverse backgrounds, identities, and abilities in an organization or community; it is actively making people welcome. We call for further research into the dimensions of localization we describe, and particularly localizing inclusion as an essential practice for cross-cultural, global design and engagement.

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Localizing Communities

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Of Scripts and Prototypes: A Two-Part Approach to User Experience Design for International Contexts

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Abstract

Purpose: Increasingly, technical communicators need to develop materials that meet the usability expectations of audiences in different nations and from different cultures. This article presents a research approach technical communicators can use to better understand and design materials for the different contexts in which individual in other nations use a given technology or communication product.

Method: I review how an understanding of the context in which individuals use an item (i.e., context of use) affects what constitutes usability in a setting. I then review how script theory (from cognitive psychology) and prototype theory (from linguistics) can be combined to create an effective method for identifying the variables affecting use in different cultural contexts.

Results: A focused application of script theory can provide technical communicators with a framework for identifying the variables affecting usability in different cultural contexts. Such identification can be enhanced by a targeted application of prototype theory, and technical communicators can use a combination of script theory and prototype theory to develop communication products more attuned to different cultural contexts of use.

Conclusion: When combined in a focused way, a script-prototype theory approach to researching the context of use in other cultures can help technical communicators better understand such contexts and design materials that better meet the expectations of users in other cultures.

Keywords: usability, user experience design, culture, international communication, localization

Practitioner's Takeaway:

- Presents an approach for engaging in context-based user experience design
- Overviews a method for doing effective research on the usability expectations of other cultures
- Provides a mechanism for studying context-based and cultural design expectations associated with usability

User Experience Design for International Contexts

Introduction

Today, the interconnected global economy means many businesses regularly engage in some form of international interaction. Success in such contexts is often a matter of usability: Do consumers in different markets find a particular product easy to use—and thus worth purchasing? For this reason, organizations need to begin thinking of usability in terms of different cultural perspectives of use. Specifically, the better an organization understands the expectations of other cultural audiences, the more effectively it can design products and services to meet them.

Culture, however, is nuanced and complex. Knowing what factors to consider when engaging in international user experience design (I-UXD) is thus no small undertaking. Technical communicators, information designers, and user experience (UX) professionals can therefore benefit from applications that help identify aspects affecting usability and design in different cultural contexts. A modified version of script theory (from cognitive psychology), combined with a targeted application of prototype theory (from linguistics), can provide a mechanism for understanding the settings in which cultures use communication products.

This entry explains how the combination of these two theories can help address this situation. The entry begins with an overview of how contextual factors affect expectations of use and how such factors can vary across cultures. Next, I summarize the fundamentals of script theory and prototype theory to reveal how they can help communication professionals identify the variables affecting use/usability in different international contexts. The entry then concludes with a discussion of how this combined script-prototype theory approach can facilitate effective design in international UXD (I-UXD) projects. Through this approach, I reveal how theoretical concepts from other fields can assist with I-UXD processes.

Culture, Context, and Use (Ability)

No technology is culture-free. Rather, items designed by humans generally reflect the cultures that created them (Pacey, 1996; Gautam & Blessing, 2009; Norman, 2012; Sun, 2012; Otto & Smith, 2013). Such factors might be connected to the physical environment/context in which a culture exists (e.g., designing a plow to till the

soil found in an area). Technologies can also reflect the beliefs and attitudes the members of a culture associate with tasks performed in a context (e.g., designing a plow to reflect cultural attitudes toward farming according to custom or religious belief). As such, products designed for use in the context of one culture can be ill-equipped to operate as effectively in the context of another (Pacey, 1996; Yunker, 2003; Sun, 2012).

Such factors are central to localization: The idea is that items designed for one culture need to be revised to meet the preferences and expectations of another (Yunker, 2003; Esselink, 2000). Financially, there is the temptation to restrict such “cultural re-tooling” to a limited surface level. In such cases, a product is initially designed to meet the expectations of one culture (the culture that created it), and individuals then revise that original item to address the expectations of other cultures. The changes needed to address cultural expectations effectively, however, are often deeper than the relatively “superficial” revisions some associate with localization practices (e.g., changing images to meet cultural preferences) (Sun, 2012). In truth, a re-design of the product is often essential to meeting the needs of users in global contexts.

In certain instances, an organization might decide it is not enough to revise an existing product for international audiences. Rather, the organization needs to develop a new version of the product for audiences in other cultures. (Ideally, organizations would create a culture-specific version for each of the cultures with which these materials are shared.) The idea is that each of these culture-specific, parallel products better meets the preferences and needs of different cultural groups. In such processes, a product is not initially designed for one culture and then revised to meet the expectations of others. Rather, multiple versions of the same product are created with each version designed to meet the contextual expectations a given culture associates with the use of that item. This process is sometimes referred to as *transcreation* or *glocalization*, for one is redesigning an overall product across cultural lines (Bauman, 1998; Thompson & Arsel, 2004; Sun, 2012; Merino, 2006; Pedersen, 2014; Munday, 2016). These processes generally involve developing new content to convey a common theme or achieve a common objective across different cultures vs. re-working existing content for international audiences. As such, transcreation and glocalization can also entail using different methods and modes for conveying the

same idea to different cultural groups (Welocalize, 2016; Lionbridge, 2016; casestudyinc, 2014).

These approaches are all connected to a central concept: One needs to know the contexts in which individuals use an item to design materials that meet the dynamics of that context (Petroski, 1992; Otto & Smith, 2013). This factor means the design of objects does not inherently fit with a context of use. Rather, designers need to develop materials to conform to the conditions (i.e., makes them usable) of a given context of use (Spinuzzi, 2000; Potts & Bartocci, 2009; Nielson Norman Group, 2014; Mara & Mara, 2015). As such, the old design adage “form follows function” no longer applies. Form must instead address the context in which individuals perform a function. Thus, the approach needs to be “creation conforms to context.” Unfortunately, this perspective brings new challenges for communication professionals.

The Complexities of the Context of Use

The connection between context and usability is not new. In truth, it is a cornerstone of user experience design (UXD) (Garrett, 2010; Hassenzahl & Tractinsky, 2006; Buchenau & Suri, 2000). After all, technical communicators need to understand the experiences of the individual user in order to determine how to design an item to best meet the parameters of this context of use (Getto & St.Amant, 2014). Yet, this approach complicates the design process, for it means individuals can no longer rely exclusively on laboratory-style testing to identify variables that affect how individuals use items. Rather, the designer needs to understand the actual setting/context in which an item is used.

To this end, communication professionals can employ different approaches to understand contexts of use. In some cases, they might rely on ethnographic observations to determine how individuals use an item in greater society (Spinuzzi, 2000; Mara & Mara, 2015). In others, the designer might turn to surveys or focus groups to answer specific questions on the contexts in which persons make use of an item (e.g., When do you use X? What factors affect that use? etc.) (Grey, 2014). And in still other instances, data collected via different methods can be merged to create an archetype, or persona, that reflects the contextual dynamics in which certain individuals use an item (Getto & St.Amant, 2014). Such personas can then

serve as a guide for addressing the expectations of different kinds of users (Getto & St.Amant, 2014).

Central to these approaches is understanding contexts of use—the environments in which individuals employ an item. Doing so is not easy, for a number of variables can affect how individuals use materials in a particular setting (Petroski, 1992; Norman, 2012; Rau, Plocher, & Choong, 2013; Berry, Poortinga, Segall, & Dasen, 2002). Moreover, these variables of use are often interconnected: That is, each has the power to affect/change the other variables in that context (Petroski, 1992). For example, how one uses a tool in a given context is often a matter of what objective one wishes to achieve in that setting and what other tools are present in that environment (e.g., using an axe as a wedge or a hammer depending on if a hammer or a wedge is present in and needed in that context) (Petroski, 1992). Within such a complex framework, the question becomes: How does one identify the variables of use at work in a particular context of use?

Pinpointing such variables in one’s native culture can be challenging. Doing so involves a solid understanding of that context in order to:

- Know what objective one wishes to achieve in a given context of use
- Identify the items present in a given context of use
- Determine which items are affecting use (or affecting other variables of use) in that context
- Establish how a variable of use affects the ways individuals employ an item in that context

To effectively address such factors and create usable materials, individuals need to know:

- What variables to look for
- What such variables should look like
- How such variables might affect use
- How to design to address such factors effectively

Thus, understanding the context of use in one’s native culture is a complex process. When attempting to understand the context of use of another culture, this process is further complicated by a range of other factors.

Culture and the Context of Use

The context in which individuals use an item can vary from culture to culture, and such differences have important implications for design. Consider desktop

User Experience Design for International Contexts

computers and the context of use of an office setting. For individuals in industrialized nations, the mention of this context brings to mind a particular environment that is climate controlled (to some degree) and relatively clean/free of dust and debris. Desktop computers created in these cultures are thus often designed to be usable according to the variables in this context (van Reijswoud & de Jager, 2011). The problem is this same context (the office) can involve different variables and conditions in other nations and regions. Such factors, in turn, affect the usability of the design of an object in these other contexts.

As van Reijswoud and de Jager (2011) note, one major problem with hardware (e.g., desktop computers) developed in industrialized nations is the design of the technology often makes it difficult to use in other settings. In many emerging economies, for example, offices might not be climate controlled. As a result, the prospects of computing equipment overheating and not being operational (i.e., usable) in such contexts constitute real problems. To address this variable of temperature in these settings, individuals must often adapt the design of the technology to make the item usable in that environment (e.g., removing the casing enclosing the hard drive to allow for more air flow around the computer's circuit boards, CPU, etc.). Add the variable of high levels of sand particulates in the air (e.g., in a desert context), and individuals again need to adapt the design for the technology to keep it operational and usable in this cultural context of use. (Dusty environments often result in the clogging of cooling fans and other mechanical parts found on many desktops designed for use in industrialized nations.)

The idea that different factors affect the context of use in other cultures is not new. In fact, parallel contexts often have different variables across cultures. For these reasons, scholars such as Getto and St.Amant (2014), Breuch (2015), and Verhulsdonck (2015) have noted that conventional UX and UXD approaches to understating contexts of use (e.g., the use of personas) must be modified to address a range of cultural, geographic, and other variables. Additionally, one problem inherent to understanding other cultural contexts is individuals are often trained to look for items/variables that exist in their own culture and in terms of what that item looks like in that culture (St. Amant, 2015 & 2016; Kostelnick, 1995, 2011). As a result, it might be difficult for a technical communicator

from one culture to identify or understand the variables of use at work in the context of use in a different culture. The result is an incomplete understanding of a given context of use related to international settings.

The challenge for technical communicators becomes finding methods, frameworks, or approaches that can help identify the variables of use at work in the contexts of use in other cultures. Such models, moreover, need to help the technical communicator know what variables to look for and what such variables should look like in order to understand such contexts. Fortunately, a modified version of script theory, in combination with a targeted application of prototype theory, can provide a mechanism for addressing such factors.

Script Theory: Identifying Variables in the Contexts of Use

First proposed by Silvan Tomkins in the 1950s, script theory examines patterns of action in particular contexts (Tomkins, 1978, 1987; Norman, 2002). The idea is to identify the variables affecting behavior in an environment so one can understand the assumptions individuals have about what will take place in that setting. To do so, Tomkins borrowed from the language of the theater and viewed discrete units of action in terms of *scenes*. Each scene was a specific kind of event with a recognizable beginning and ending point (e.g., the process of ordering a meal at a restaurant). Each scene also contained items (variables) that affected the course of actions in a scene (e.g., needing menus to know what to order and a waiter to take the order). Individuals then planned their behavior in a context based upon what they expected to take place in that scene/context. Accordingly, the more technical communicators understand scene-related experiences, the better they can design materials to meet the user's expectations of what will take place in that context. (Knowing, for example, one needs a menu to order in a restaurant allows one to account for the design of other items to facilitate the ordering process.)

To better understand this context for action, Schank and Abelson (1977) extended Tomkins' ideas and identified other script-based variables that affected expectations and behaviors in a scene. These items included:

- **Scene:** The process of performing a particular standard activity/action (e.g., ordering at a restaurant)

- **Setting:** The location/context in which the action (scene) takes place (e.g., the restaurant)
- **Roles:** The individuals one expects to encounter in and play a specific role in a given setting (e.g., waiter and customers)
- **Props:** The items one expects to encounter and to use—or that others will have and use—in a scene to achieve the objective of the overall scene (e.g., tables, chairs, menus)
- **Entry Conditions:** The criteria something must meet to enter a scene/how items get into a scene (e.g., menus carried to a table by a waiter when customers are seated)
- **Exit Conditions:** The criteria something must meet to exit a scene/how items leave the scene (e.g., menus carried away by a waiter after customers have ordered) (Schank & Abelson, 1977)

As well as:

- **Sequence:** The order in which events/individual actions happen in a scene (e.g., customers enter the restaurant, customers are seated by hostess/host, waiter takes customers' orders) (Schank, 1973; Abelson, 1973)

Each factor represents something individuals look for when performing an activity in a particular context. As such, the presence or absence of script-based items influences a person's expectations of usability in a setting (Norman, 2002). If, for example, the expected items are there, then one can use them to perform a task as desired and expected in that context. If not, one cannot. In this way, these script-based items provide technical communicators with a framework for tracking the factors, or variables, individuals associate with usability in specific settings.

These expectations, moreover, are based on experience over time (Shiraev & Levy, 2004). That is, by repeatedly performing an activity in a given context (e.g., ordering at a restaurant), the individual develops a script for what should take place in that context. This factor means the script-related expectations of one individual do not inherently map onto those of another. The greater the differences among the experiences of individuals, the more divergent the scripts. For this reason, technical communicators cannot simply use the scripts of their native culture to guide design in international environments. Rather, they need to

understand the script-based expectations of other cultures to develop materials international audiences will view as usable in a particular setting.

To apply script theory to I-UXD, individuals should first ask (and address) the following questions:

- What is the overall objective the user wishes to accomplish (scene)?
- In what context will the user perform the actions needed to achieve this objective (setting)?
- What are the various, individual steps the user must take—and in what order—to achieve this objective in this context (sequence)?
- What individuals will the user expect to rely on to perform these tasks in this context (roles)?
- What items does the user expect to employ (or for others to use) to perform the essential tasks in this process (props)?
- How can the user access or obtain materials and information at different points in the process (entry conditions)?
- How can the user remove items from or send/transmit information during the process (exit conditions)?

The resulting answers can help technical communicators identify what constitutes usability for individuals from other cultures. Researchers can next map these answers into frameworks or models akin to the examples in Figure 1a and 1b. Technical communicators could then use this map to guide their design activities according to the script expectations of users from other cultures.

Technical communicators could also employ a variety of methods to identify the script-based expectations other cultures associate with a particular context of use. These approaches include:

- **User Interviews:** Interview users from the other culture and ask them to identify the script-related variables noted here. (For the process of calling an online help system, ask individuals "What do you expect to encounter during this process?" Also ask about the sequence of actions: "What is the sequence of events during this process?" and "Who is present/participates in the process to help you?")
- **Focus Groups:** Meet with groups of individuals from the intended audience and request participants to explain the process of completing a particular task in a given context. In so doing,

User Experience Design for International Contexts

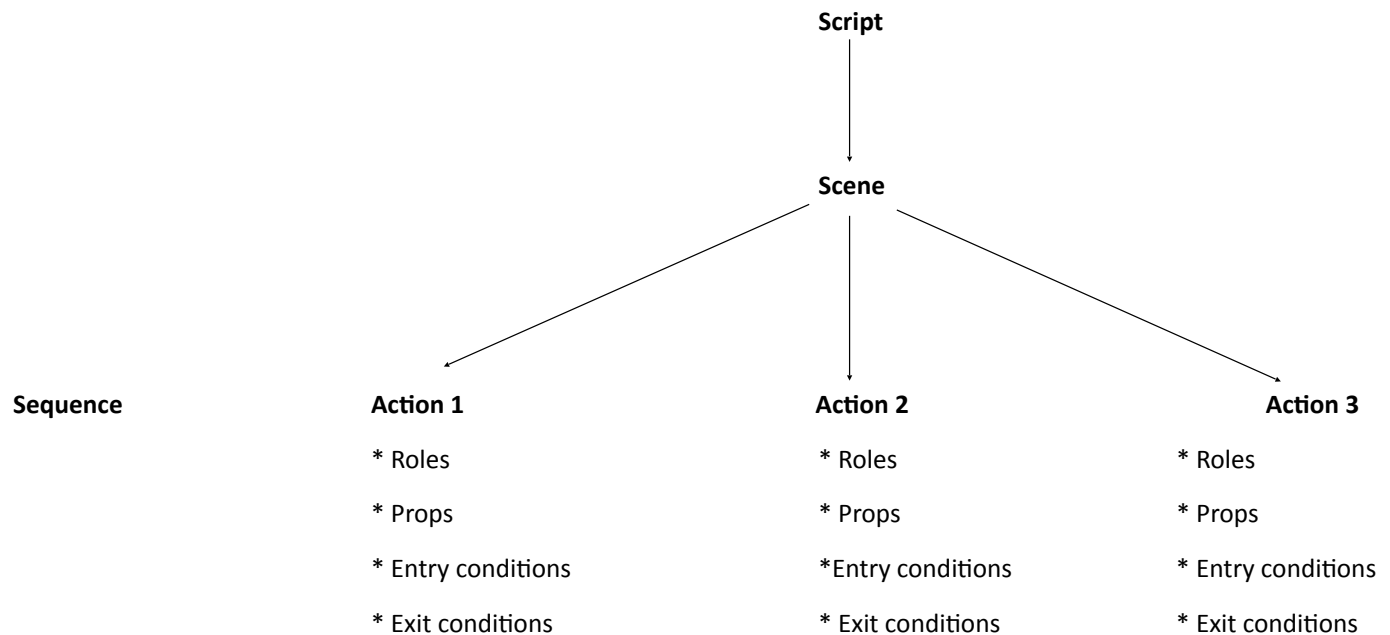


Figure 1a: A basic script map of a context of use

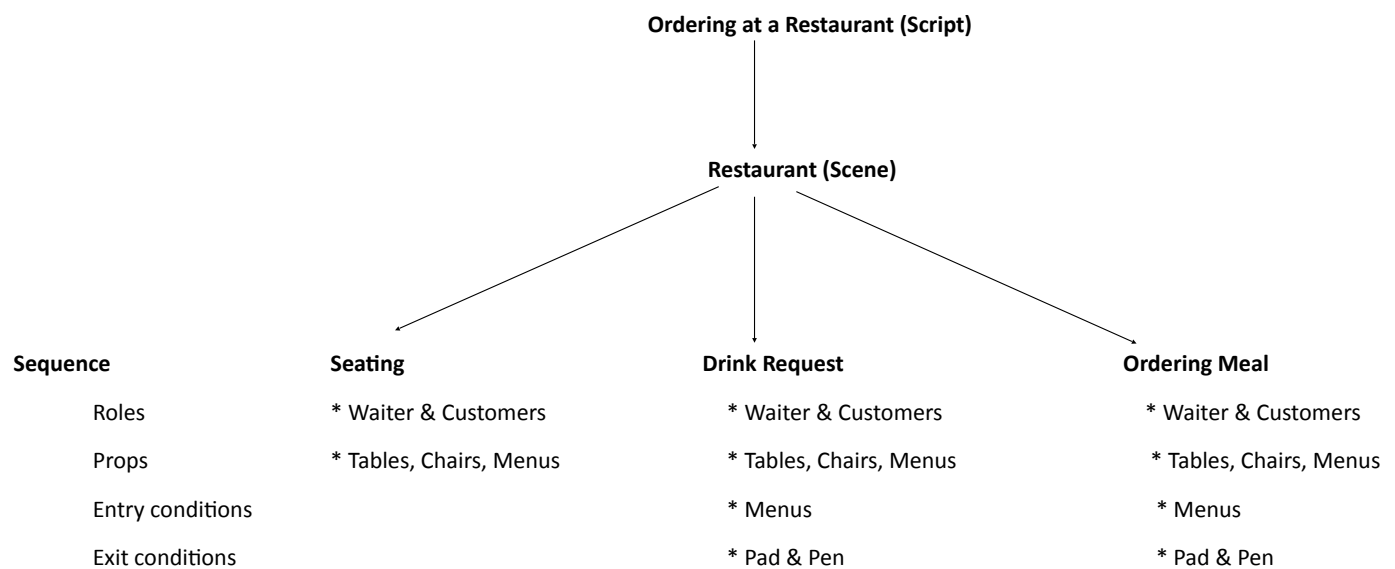


Figure 1b: A map of the script for ordering at a restaurant

the technical communicator could ask group members to respond to specific script-based questions as they move through the process (e.g., “For the process of accessing customer support online, what is the first thing you do? What do you expect to see on that screen? How are you obtaining the information needed to perform this particular task?”)

Once a technical communicator has developed a draft script from this initial research, she or he should have members of the related culture review and comment on that script to note if:

- Any essential script-related element is misidentified or missing from this context of use
- Something the observer identified as a variable of use actually does affect behavior in that context

While script theory can help identify variables influencing usability in a context, one problem remains: identification. That is, what a variable should look like in a given context can vary from culture to culture and in unexpected ways. This factor means it might be difficult for technical communicators from one culture to identify script-based variables of use in another.

The Representation Problem: The Appearance of Variables in the Context of Use

What a particular item/variable of use (e.g., a prop or a role) should look like in a given context can vary from culture to culture (Kostelnick, 2011; Kostelnick & Roberts, 1998). In some cases, these differences affect recognition: The individual is unable to recognize the item she or he is looking for because the design of that item is so different in another culture (St.Amant, 2005; Kostelnick & Roberts, 1998). Lack of recognition thus results in lack of use. In other cases, such cultural variations don't inhibit recognition, but they do affect acceptability. In these cases, the design of the item might make the object recognizable, but the way in which the item is depicted is considered unacceptable (or offensive) (St.Amant, 2005; Aitchinson, 1994). As such, the unacceptable item is not used.

These factors have important implications for I-UXD. Consider the use of a gesturing hand to point users to a particular menu option. The finger(s) one should use for legitimate pointing motions vs. making an obscene gesture are set by cultural expectations (Horton, 1994). Such expectations, moreover, can vary from culture to culture. (Certain representations of the US hand gesture of "V for victory" are an obscene gesture in the UK; others are not.) In such situations, script-based analysis of context might identify a hand with a pointing finger as a prop individuals in a culture associated with the effective design of an interface. If, however the designer is not careful, she or he might produce an interface that contains an obscene gesture (vs. an expected prop) that affects the use of that item. Thus, technical communicators need to be aware of cultural expectations of *recognizability* and *acceptability* when developing materials for different contexts of use.

These recognition and acceptability factors have pronounced implications for researching contexts

of use. To track variables of use in a given context, technical communicators must be able to identify those variables and determine their appropriateness. Technical communicators therefore need to know what these variables look like in that context. Cultural differences, however, might mean technical communicators are unable to identify certain variables in the context of use of another culture (St.Amant, 2016).

But the identification of variables is not the only problem. Once identified, the technical communicator must replicate these variables when designing materials other cultures consider usable. To address this situation, technical communicators need a mechanism that can augment script theory and identify the variables of use in various cultural contexts. Such a mechanism must also account for expectations of recognizability and acceptability based on cultural norms. Prototype theory can serve as such a mechanism.

Prototype Theory: Identifying Variables of Use in Different Cultural Contexts

Proposed by Eleanor Rosch in the 1970s and more recently used in technical communication, prototype theory examines the connections between words and visuals (Rosch, 1978; St.Amant, 2005). The idea works as follows: For most words in a language, individuals have a visual representation of what that item should look like. So, when an individual hears a word like *hammer*, a particular image of a hammer springs to mind. This visual represents the ideal of the prototype for what something should look like for the individual to identify it as a hammer (Rosch, 1978; Aitchison, 1994). When the individual encounters a new object, she or he compares that new object to all of the ideals (visual representations) in his or her mental database. If the new object looks very much like the individual's ideal for a given item, then the individual will identify it as such. If not, the individual will move on to compare the new object to other ideals until a more exact match is found (Aitchison, 1994; St.Amant, 2005).

This comparative identification process is not based on the overall depiction of an item but on the different characteristics (i.e., parts) that collectively comprise an ideal. When one compares a new object to a particular ideal, that individual does not look at that ideal as a single, self-contained unit. Rather, the individual views that ideal as a collection of design

User Experience Design for International Contexts

features. She or he then attempts to determine how many of those individual features—or characteristics—the new item has in common with the ideal to which it is being compared (Aitchison, 1994; St.Amant, 2005). The more characteristics the new item has in common with an ideal, the more likely that new item is to be identified as such. (For example, the more characteristics a new item has in common with one's ideal for *hammer*, the more likely the individual is to identify that object as a hammer.)

Where do these ideals and their related visual characteristics come from? Like scripts, individuals learn these prototype expectations based on exposure over time. That is, the more an individual experiences a particular visual used in association with a given concept (e.g., always sees the same object when persons around them use the word *hammer*), the stronger the association becomes between the appearance of that item and what the ideal for the related object should look like (Aitchison, 1994). It is through such repeated exposure over time that individuals form their prototype-ideal expectations. As cultures often expose individuals to different items in relation to the same term or concept, the idea an individual uses to recognize items in one culture might differ from another (Kostelnick, 1995; St.Amant, 2005).

Similarly, one's native culture also teaches him or her what an acceptable (vs. just a recognizable) depiction of a given item should look like (e.g., what constitutes a recognizable vs. an acceptable depiction of a teacher based on how the individual is dressed) (St.Amant, 2015). These factors mean technical communicators cannot assume what something looks like is universal in terms of recognizability and acceptability (St.Amant, 2015). Rather, the individual needs to know:

- What the ideal for the related item is in a given culture
- What features/characteristics members of that culture associate with recognizable and acceptable depictions of an item

This information is key to identifying items in the contexts of use of other cultures.

How, then, can technical communicators effectively identify the prototypes (and related characteristics) that individuals from other cultures associate with variables of use in a given context? By doing the following things:

- Conduct interviews in which individuals from a culture are asked to describe what items (props) or individuals (roles) should look like/what features they should have to be recognizable and acceptable in a particular setting (e.g., What does a doctor look like in the setting of an emergency room?).
- Ask interviewees to draw an example of what a given item or individual should look like in a given context of use (e.g., What does an ATM look like in your culture?). As they do so, ask the interviewees to identify the key features/characteristics they are including to make the image recognizable and acceptable to other members of their culture (e.g., Which features are particularly important for you to identify this object as a file storage unit?).
- Ask interviewees to comment on different depictions of an item or individual in terms of how recognizable and acceptable that depiction is (e.g., Is this image an effective representation of a workstation?). Also ask what the interviewee would do (what features she or he would add, modify, or remove) to make that depiction more recognizable and acceptable to members of his or her native culture (e.g., How would you improve this image of a workstation?).

Technical communicators can obtain such information via individual interviews or discussions with small groups/focus groups comprised of individuals from the related culture. Technical communicators could also combine these approaches (e.g., use interviews to gain initial information, then create draft images that are critiqued by members of a focus group). The core idea is for individuals from the related culture to provide design/prototype information on the context of use in that culture. Technical communicators can use this information to identify variables in a context of use and to design materials for that context.

Putting It All Together: The Overall Script-Prototype Approach to I-UXD

Script theory and prototype theory each offer a mechanism for understanding the expectations of different cultural audiences. When combined, this script-prototype approach can be a powerful tool for researching the contexts of use in different cultures. The

key to success involves merging these two frameworks into a process technical communicators can employ when researching the variables affecting use in different cultural contexts.

The starting focus: Identifying the context/scene

The first step in this process involves identifying the context of use one wishes to study. Once the context is known, the technical communicator can map the related script and identify the variables of use at work in this context. (See Figure 1a and 1b for an example of such mapping.) The central question to ask here is, “In what context do individuals from this culture engage in process X?” (e.g., “In what context do university students in Japan use mobile phones to access online help systems?”). The answer is important, because individuals from different cultures can engage in the same process in a variety of contexts. Many Anglo-Americans, for example, check work email all the time from any location they can obtain online access. Many Danes, by contrast, only check work email from the workplace/office during work hours. Each of these contexts of use involves different variables the technical communicator needs to identify to map an effective script of use for the related cultural audience. Each of these contexts of use also represents a foundational script for context of use in that culture.

Answers to this initial question can come from short interviews or brief questionnaires that ask individuals from a particular cultural audience, “Where and when do you do X?” (e.g., “Where and when do you check your work email?”). The related responses identify the setting/scene the technical communicator will need to map to identify the variables of use at work in a given environment.

The sequence of actions: Tracing the process of events in the scene

Once the overall scene is known, the next step becomes identifying:

- The actions one needs to perform to achieve the overall objective of this scene
- The sequence in which such actions must occur to achieve that objective

Mapping these factors can involve interviews or focus groups in which individuals are asked, “Talk

through/explain the different steps or actions you will take to perform this overall task in this setting.” At this point, compiling the results obtained from multiple sources is important, because individuals might use different actions to achieve the overall objective in a context of use. The key is for technical communicators to identify an overall, general sequence of events based on the frequency in which an action is performed in the context of use in a given culture.

To map such settings, the technical communicator could use initial interviews with members of the related culture and record the sequence of events related by each interviewee. The technical communicator could then compare these results and create a map of an initial sequence of tasks/activities for that context of use in that culture. The technical communicator could next share this initial map with a focus group comprised of members from that culture. Participants in this group could provide the information and insights needed to modify that draft map of tasks/activities into one that better reflects the general expectations many members of the related culture associate with that context of use.

Mapping the variables of use: Applying prototypes to scripts

Once the scene is identified and the sequence of events is mapped, the next step becomes cataloging the variables of use in that context. Doing so involves two parts: Collecting focused responses and performing participant observations.

Collecting focused responses involves obtaining information directly from the members of a culture. Ideally, technical communicators can do this through interviews in which they employ a series of questions to identify the variables members of a culture associate with the actions/tasks that occur in a particular context of use (e.g., using one’s mobile phone to access an online help system). Such a process would start with an open-ended directive like, “Tell me how you would do X.” As the interviewee talks through the process, the technical communicator could ask more focused questions to determine what variables were involved with different parts of this process. Such questions might be:

- What items are in the area around you? (to identify potential props)
- Do you use any of them for this process? (to identify actual props)

User Experience Design for International Contexts

- Would anyone be available to help with this process? (to identify roles)
- How would you contact/speak with that person and when? (to identify entry conditions)
- How would you know you had the correct person? (to identify roles)
- What do you expect that person to do or say? (to identify roles)

Through such guided questioning, the technical communicator can obtain data on the variables of use expected in the related context.

During this process, the technical communicator also needs to obtain prototype data on what the variables in the overall scene should look like. Technical communicators should therefore ask interviewees to identify and describe the variables in a given scene. In such a process, the technical communicator should first ask the interviewee to identify the variables present (e.g., What are you using to do task X?). Once the variable is identified, the technical communicator should ask the interviewee to describe the appearance of that variable (e.g., Can you describe X to me? What does it look like?). Such a process might work as follows:

- **For props:** “Can you tell me what objects are in the environment around you? Which objects would you use to perform task X of a process? Can you describe those objects to me? What do they look like so you know what they are? How will you use them?”
- **For roles/actors:** “Who else is in this environment? How do you know who they are/what features identify who they are? How will they assist you with different tasks in this process? What will they do or say to help with this task?”

Such guided, open questioning helps technical communicators identify:

- The different variables at work in the script for a given context of use
- The prototypes (and characteristics) associated with identifying those variables in that context

Technical communicators can use this information to map different contexts of use and create materials that meet related user expectations for that environment.

Observational research: Testing one's findings

Once technical communicators have identified the different script factors/variables and their related prototypes, they need to test such factors. This is because interview data is not necessarily representative of reality. In truth, individuals can mis-remember or embellish certain details (Zimmerman & Muraski, 1995). Technical communicators therefore need to review the sequence of events and the variables of use identified in a given context to determine if:

- Events in a sequence are present and occur as described (sequence)
- Variables of use identified by research are actually present (props and roles)
- Variables of use actually look like the items described by interviewees (prototypes)
- Individuals (and roles) employ these variables of use as described by interviewees

Confirming such factors involves a different kind of research: ethnographic observation.

For this part of the process, the technical communicator would situate her- or himself in a given context of use of another culture and either ask the participant to undertake a given process or watch as members of that culture engage in that process (Spinuzzi, 2000; Otto & Smith, 2013). During this observational period, the technical communicator would look for certain script-related items:

- Is the process/sequence of actions taking place as identified?
- Are the variables identified through the initial research used as described by interviewees and focus group participants?
- Are those variables being employed in the same way as identified in the initial research?

The technical communicator also needs to scrutinize the script-related elements in that environment to confirm prototype-related findings (i.e., if variables have the characteristics the interviewees claim they should). Technical communicators can use the results of such observational research to modify the initial script-prototype framework for usability in this context and to test it again to see how closely this modified script (and related prototypes) conforms to follow-up observations.

While essential, this observational confirmation needs to come at the end (vs. the start) of this research

process. The reason is recognition: Until individuals know what items to look for in the context of use of another culture, the results of observational research could be inaccurate or skewed. This problem is due to the fact that individuals tend to look for what their native culture tells them should be in a given context of use (St.Amant, 2016). Moreover, even if the observer can identify variables not found in her/his native culture, she or he might try to understand those variables according to the parameters of her/his native culture (i.e., just because I can see X does not mean I know why X is there or what it does in that context) (St.Amant, 2016). For this reason, such observational research should occur after individuals know what to look for and why.

Prospective next steps in the process

The results of this script-prototype research process allow technical communicators to do a number of things. First, they can create personas of kinds of users from other cultures and use these personas to guide the design process (Getto & St.Amant, 2014). Second, they can use this information to create and test initial designs of a product with a given cultural audience and modify that design based on feedback. Third, they can engage in field research to study how individuals in a culture attempt to achieve certain objectives in a particular context. Finally, they can use such results to revise existing materials or decide to develop completely new ones based on the contextual expectations of users from other cultures. In these ways, the script-prototype approach to I-UXD can provide technical communicators with a mechanism for exploring a range of usability-related aspects in different international settings.

Conclusion

As the economies of the world become increasingly intertwined, technical communicators will need to know how to design materials for a range of international audiences. Success will be a matter of usability—creating products and services that are easy to use in a range of cultural environments. Achieving this objective will require technical communicators to approach user experience design according to the contexts of use found in different cultures. To do so, technical communicators need to employ methods that can help them identify, understand, and address the

variables affecting use in such contexts. The combined script-prototype approach described here can serve as an important mechanism for achieving this objective.

Viewing usability from a script theory perspective helps technical communicators know what variables to look for in a given context of use. The combined use of prototype theory with script theory can further help technical communicators identify those variables. The key is to employ this approach in a way that gleans effective, initial data on users from other cultures and then to develop and test designs based on these findings. By comparing the results of script-prototype research on context of use in other cultures, academic researchers and industry practitioners alike can gain a better, more comprehensive understanding of the dynamics affecting usability in other cultures.

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Converging Fields, Expanding Outcomes: Technical Communication, Translation, and Design at a Non-profit Organization

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Abstract

Purpose: The purpose of this article is to illustrate how processes of translation, technical communication, and design converge in the development and dissemination of multilingual content at a non-profit organization in the US.

Method: As part of a larger project, the researchers observed and recorded (through video footage and field notes) translation activities taking place in a Language Services office during the course of two years. To visualize translation activities, the researchers used screencast recordings that captured how translators coordinated digital resources (e.g., digital translation tools, online dictionaries) to successfully translate information. Finally, the researchers conducted 12 artifact-based interviews with translators at the research site.

Results: Results show that translation, technical communication, and design activities are enacted iteratively and recursively by participants at this research site. Translators at this site must work across diverse design processes (UX design, information design, visual and document design) that often get subsumed into the translation process. Although employees within this organization do not consider themselves designers or technical communicators, the work that takes place within this office requires expertise across these areas of study and practice.

Conclusion: Designing and creating multilingual content often requires the intellectual contributions of individuals who can move across translation, technical communication, and design activities simultaneously. As the field of technical communication (particularly in the US) continues to acknowledge the value of global, multilingual content, it's important that we highlight the expertise and added value of the multilingual communicators who make this work possible and accessible to users across cultures and languages.

Keywords: technical communication, translation, user-experience design, visual communication, multilingualism

Practitioner's Takeaway:

- Translation, technical communication, and design processes are embedded in the material realities of multilingual practitioners.
- Multilingual communicators in a non-profit organization combine and cross skills in the creation of multilingual content.
- Concrete models of translation processes illustrate the complexities embedded within the translation profession.

Introduction

As technological advances both facilitate and demand the creation and dissemination of global content, the skills of successful translators and technical communicators continue to simultaneously converge and expand. In the introduction to their special issue focused on translation and technical communication, *connexions* editors Maylath, Muñoz Martín, & Pacheco Pinto (2015) explain, “Translating today often involves several agents with different roles, responsibilities and skills. This entails creative work, various innovative procedures, and collaborative networks in highly technological, distributed environments” (p. 3). In addition, a growing emphasis on global UX and international technical communication has led researchers and practitioners to emphasize the connections between technical communication, user experience, and design (Quesenbery & Szuc, 2012; Redish, 2010; Schumacher, 2010; Sun, 2012). With the increased need to develop multilingual, global-ready content, businesses and organizations now need individuals who can work as (and with) translators, technical communicators, and information designers to provide content that can be used and adapted in a wide range of contexts (Ding & Li, 2016; Windl and Heimgärtner, 2013; Lefevre, 2012).

Although theoretical conversations between translation, technical communication, and design have been emerging within the literature for some time, in this article, we seek to better understand how connections between these activities are being enacted by professionals developing multilingual content in the US. We want to understand how the convergence among technical communication, translation, and design activities may impact the daily realities of the professionals who conduct this work. Working with professional translators in a non-profit organization, we analyze if and how the theoretical connections being made by researchers in translation studies (e.g., Hirvonen & Tittula, 2010), technical communication (e.g., Ding, 2010), and design (e.g., Brumberger, 2014; Windl & Heimgärtner, 2013) are experienced by professionals navigating multilingual interactions for their clients and communities. To do so, we will first define and outline current calls for connecting technical communication, design, and translation, before introducing our research site and methods. In order to

illustrate the diverse responsibilities of practitioners at our research site, we present three distinct but related data narratives. In Data narrative 1: Mirror translation as design, we show how general translation activities require extensive document design that moves beyond the mere formatting of a file. In Data narrative 2: Translating and designing across tools, we model the complex processes of translators as they incorporate multiple tools and approaches to translate, design, and code a 127-page document. In Data narrative 3: Teaching translation and UX design, we illustrate the ways that translators consider not just the words on the page but their clients and ultimately their users as they teach community members how to localize and practice translations. We then conclude by providing suggestions and strategies for both acknowledging and addressing the shifting skills and qualifications of contemporary professionals working across languages and cultures.

Connecting Technical Communication, Translation, And Design

Although the aim of this paper is to illustrate how technical communication, translation, and design overlap in the creation of multilingual content, we want to first identify how we are defining the terms and processes used in our analysis:

Translation: Although early conceptions of translation were limited to describing the process of transforming words in one language to another language (Cronin, 2009; Gnecci et al., 2011), definitions of translation have now been broadened to include not only the replacement of words but also the adaptation of content across languages and cultures (Gonzales & Zantjer, 2015). Concepts like *localization* have also been used in relation to translation, describing how users, designers, and developers adapt language and technologies to meet the needs of local users in various contexts (Sun, 2012).

Because we worked with a local community organization that translates information for a variety of clients (including community members, businesses, technology companies, and other non-profits), translation, as we will be using the term, also encompasses what some have called “technical translation” (Byrne, 2006; Ding & Li, 2016). According to Byrne (2006), technical translation “is a type of specialized translation that deals with technology and

Technical Communication, Translation, and Design at a Non-profit Organization

technological texts” (p. 3). All of the translation work that we studied for the purposes of this project rely on technical language, technology, and technological texts to varying degrees.

Design: We acknowledge that the term *design* is highly fluid and continues to merge with concepts from HCI (Human-Computer Interaction), STS (science and technology studies), and ICD (information communication design studies), based on the rapid digital advancements and financial globalization that have contributed to a blurring of design professions, which has altered design thinking and processes (Verhulsdonck, 2015; Getto & Amant, 2014; Bremner & Rodgers, 2013; Spinnuzzi, 2012). For the purposes of this article, we define design as the process of making of any object including, but not limited to: documents, photo manipulations, videos, advertisements, webpages, and apps, with an explicit emphasis on the experience of the designed object on the user (Norman, 2013; Luck, 2012; Kalantidou & Fry, 2014). In this way, we use the term design to reference visual and digital making processes and the corresponding user experience surrounding these products.

While connections between technical communication, translation, and design have been in place in non-Western countries for decades (Ding, 2010; Ding & Li, 2016), the increasing need for multilingual software and technology design in the US has led to an added collaboration and cross-conversation between academics and industry practitioners working at different stages of global content development (Maylath, Muñoz Martín, & Pacheco Pinto, 2015). Contemporary translators, technical communicators, and designers are now more than ever required to navigate cultural, linguistic, and technological transitions, often simultaneously (Ding, 2010; Ketola, 2016; Frascara, 2015). For example, Hirvonen and Tittula (2010) emphasize the need for translators to consider visual and spoken modes as they transform information across languages. Similarly, in visual communication, Brumberger (2014) calls for further consideration of intercultural design in technical communication pedagogy and practice, emphasizing the need for technical communicators to understand how words and visuals work (or fail to work) together across languages and cultures.

Furthermore, conversations across technical communication, design studies, and user experience

have constantly revisited what role design plays in technical communications (Blythe, Lauer, & Curran, 2014; Redish & Barnum, 2011), particularly for users that are increasingly global (Walwema, 2016). Eleni Kalantidou and Tony Fry (2014) insist that a culturally inclusive design process must move away from a “problem-solving activity” and toward a “problem-defining” activity that acknowledges the ways designed objects construct our surroundings and existences. As these brief examples illustrate, technical communicators, translators, and designers are now more than ever encouraged (if not required) to navigate across media, languages, and cultures to meet the needs of increasingly diverse audiences.

Undoubtedly, designing and disseminating information across languages and contexts requires an added level of complexity in both theory and practice, as individuals must consider cultural differences and ethical practices that can be accepted by users in diverse contexts (Walton, Zrally, & Mugengana, 2015). As these areas of theory and practice continue to converge in an effort to practice successful global content development (Gnecchi et al., 2011), it’s important for researchers and practitioners to consider how these overlaps may (or may not) affect the training, preparation, and daily realities of professionals (Brumberger & Lauer, 2015; Lauer & Brumberger, 2016). For this reason, in this article, we seek to understand how professionals working in a small translations office enact processes of translation, technical communication, and design as they create and disseminate multilingual content. By understanding how practitioners in this office leverage their skills in technical communication, translation, and design, we aim to begin answering the following questions:

1. How do processes of translation and design converge (or remain separate) in the technical communication of multilingual content?
2. How do convergences between translation, technical communication, and design affect the daily work scenarios of multilingual communicators who create multilingual content?
3. What material realities (e.g., resources, staff, training) influence the execution of successful translation and design in technical communication?

By answering these questions, we aim to illustrate how the complex relationships between translation,

technical communication, and design are enacted in practice by professionals aiming to deliver multilingual content to their community. Our goal is to understand overlaps between processes in the creation of multilingual content, in order to continue building definitions that accurately reflect the intellectual work and labor of professionals in the field.

Method

In order to better understand the connections between technical communication, translation, and design as they are enacted by professionals working in multilingual contexts, we partnered with the Language Services Department at the Hispanic Center of Western Michigan. The Hispanic Center of Western Michigan is a non-profit organization located in Grand Rapids, Michigan. The purpose of this organization is to provide access, education, and resources to the Latinx community in West Michigan and beyond (www.hispanic-center.org).

Although the Hispanic Center as a whole is a non-profit organization, the Language Services Department located inside the Hispanic Center is a for-profit translation and interpretation business aiming to provide language accessibility to the Latinx community. All of the revenue earned in the Language Services Department is re-invested in the Hispanic Center, fueling various programs for the larger organization. In this way, the Language Services Department at the Hispanic Center works under the same institutional constraints as a non-profit organization while simultaneously charging a small fee for services that is then re-invested into the community.

The Language Services Department at the Hispanic Center employs 30 bilingual (Spanish-English) translators and interpreters who facilitate communication between Spanish-speaking community members and over 50 local service and government organizations in the City of Grand Rapids (e.g., the local police department, Child Protective Services, technology businesses, local museums, other non-profit organizations). For the purposes of this study, we worked primarily with 4 in-house translators who are in charge of completing written translations of technical documents (e.g., birth certificates, medical records, websites). In this way, we were able to trace how 4 translators used technical communication, translation, and design skills to complete their written work across languages.

Situating this study in a small business located within a non-profit organization is an intentional and important component of this project. While the urgency to design and disseminate global content has led high-profit companies to develop additional organizational roles and positions, low-budget organizations, such as the Language Services Department at the Hispanic Center, do not have the resources to establish new positions to fit increasing demands. That is, in high-profit organizations, such as Microsoft, an exponential growth in localization teams has led to the development of new positions, such as localization engineers, localization program managers, and political standardization experts. While these new positions are incredibly valuable, organizations with less funding and resources, particularly those working for and within marginalized communities, don't always have the revenue or infrastructure needed to develop and fund new positions to meet growing demands in localization and culturally sensitive design. Employees for these organizations prioritize the needs of their clients while negotiating multiple roles that require highly specialized knowledge, technology, and products. Situating this project within an organization like the Language Services Department, in turn, is an opportunity to understand the various roles and pressures that professionals navigate when providing multilingual content to marginalized communities. By situating this study within a low-budget organization like the Language Services Department, we aim to contribute an additional and important perspective to conversations about the shifting roles of technical communicators, translators, and designers in diverse organizations in and outside of the US.

Data Collection

As part of a larger project, we observed and recorded (through video footage and field notes) translation activities taking place in the Language Services Department office during the course of two years. To visualize translation activities, we used screencast recordings that captured how translators coordinated digital resources (e.g., digital translation tools, online dictionaries) to successfully translate information. These screencast recordings also allowed us to see how translators used digital resources to design information on technical documents in their translations, such as seals and stamps on birth certificates and medical records.

Technical Communication, Translation, and Design at a Non-profit Organization

Although screencast recordings allowed us to capture how translators navigated digital resources to transform information across languages, much of the translation work that took place in the Language Services Department required the use of embodied activities. That is, translators in the office would frequently use gestures, tell stories, or have other conversations in an effort to successfully translate specific words, phrases, and descriptions for their community members (for a detailed description of translators' embodied strategies, see Gonzales, 2016). For this reason, we used video footage to record how translators interacted with each other and with their physical surroundings as they composed across languages.

In addition to the recordings, we conducted interviews with translators to discuss the activities being recorded throughout our analysis. Rather than drawing our own limited analyses and conclusions from the data collected, we conducted artifact-based interviews with translators, where we watched selected parts of the screencast data and video footage to discuss how translation, technical communication, and design were being enacted in the recorded activities. Table 1 provides a summary of all the data we collected to understand the various activities taking place as information was transformed across languages in the Language Services Department.

Table 1. Data collected in the Language Services Department

Data Type	Quantity Collected
Screen cast recordings	20 hours
Video footage	400 hours
Written field notes	74 pages
Artifact-based interviews	12 interviews/ 750 minutes of video footage

From this data, we constructed an interrelating model of translation that combines network diagrams of translation processes with a flow matrix (Spinuzzi, 2008, 2015) to illustrate how translators navigated across translation and design in the crafting of technical communication pieces. In this way, we traced how translators moved across translation, technical communication, and design activities as they collaborated with various clients to transform information across languages. Triangulating our

screencast recordings, video footage, and artifact-based interviews, we developed models illustrating how our participants move across roles and activities in their daily interactions. These models were developed both from our observation of discrete translation activities as well as from the artifact-based interviews conducted with participants. In this way, our analysis and the corresponding models reflect both our own interpretation of recorded activities and our participants' understanding of their work. In the sections that follow, we provide representative examples of how technical communication, translation, and design converged in our data.

Results

One of the most immediate findings we noted through our work with the Language Services Department is the connection between the organization's mission and its corresponding activities. The Language Services Department operates on what Sara Proaño, the director of the department, calls a "three-tiered approach to community engagement." During an interview, Sara defined this three-tiered approach in the following way:

1. Language Accessibility, which entails providing translation and interpretation services that allow Spanish-speaking community members to access social services and to adequately understand government procedures.
2. Sustainability, which Sara defines as the organization earning a modest income from language services that then get re-applied into other initiatives within the Hispanic Center.
3. Leadership and Professional Development. All of the translators and interpreters in the Language Services Department are members of the Latinx community in the Grand Rapids area. Bilingual community members are encouraged to join the Language Services Department team by attending training programs and workshops that can lead to job opportunities in the translation and interpretation professions. For example, during her interview, Sara referenced Carla, a current interpreter in the Language Services Department who had been working as an egg packer in a factory for 12 years before entering one of the Language Services Department training initiatives.

Because the Language Services Department is founded on Sara's three-tiered community engagement model, the goals and aims of the organization span beyond providing translation and interpretation services. Indeed, the organization's commitment to the community consists of translation and interpretation activities rooted in social justice (Yajima & Toyosaki, 2016). In turn, the three-tiered approach and related organizational objectives inherently affect the daily activities of employees within this organization. For instance, translators act not only as adapters of language but also as community advocates, consulting with service providers to tailor information for Latinx communities rather than merely translating provided content. In addition, employees translating legal documents aim not only to complete translation projects quickly to turn a profit but also seek to help community members as they use this translated information to pursue new residency status or to enroll their children in new schools. In this way, as Sara explained during her interview, activities within the Language Services Department are "always new, as you never know what you're going to get." On any given day at any given moment, a client may walk into the office with a crisis, struggling to understand a court case, to understand medical information provided for his family, or to understand how to schedule an appointment with a service provider. For this reason, a convergence of goals, motivations, and activities is common practice within this organization, making it a unique site of study for better understanding how multilingual technical communication practices are enacted in professional contexts.

Data narrative 1: Mirror translation as design

The most common type of project to enter the Language Services Department is the translation of technical documents such as birth certificates, legal documents (e.g., court reports), and education records. After moving to the US from South and Central American countries, Latinx community members often have to translate these documents in order to gain residency, enroll in school, and qualify for health insurance (among other purposes). For this reason, the Language Services Department provides low-cost document translation to community members. Further, translators within the organization must be trained in technical translation and must also have at least a working knowledge of

government requirements for translated documents eligible to be used in legal transactions. In 2015, the Language Services Department translated approximately 5,600 legal, medical, and education documents for members of the community.

Although the language on these types of technical documents is often limited (ranging from 1–2 pages or 100–300 words), much of the work in these types of translations requires that translators design or redesign logos, seals, and other visuals across languages. To ease language accessibility in technical translations, and to ensure that government agencies will accept translated technical documents, the Department of Language services provides clients with "mirror translations," which consist of translated documents that identically match the design, layout, and formatting of the original text (Pym, 2003). Because the Language Services Department does mirror translations, graphics like the seals must all be translated and designed before the translated document is considered complete. Due to the frequency of translations requiring seals (birth certificates, proof of something, etc.), the Language Services Department's greatest source of intellectual property has become their extensive, editable document library of translated seals. Translators have built this extensive database of translated seals and stamps over the course of 27 years. Seals and stamps are categorized into birth/death/marriage certificate, educational/medical records, and other technical document templates organized by the country of origin of each original text. Figures 1–3 illustrate various seals and figures that were designed by translators during our observation.

As evidenced in Figures 1–3, the translation of technical documents, at least for participants in the Language Services Department, inherently requires multilingual, cross-cultural design. Indeed, in the video and screencast footage we recorded, translators spent 65% of their time in the translation of technical documents focused on designing logos and images. During an interview, one translator named Holly told us her time spent translating a single birth certificate was "30 minutes total, 10 minutes translating the text, 20 minutes fixing seal graphic templates." Since the Language Services Department has been in business for 27 years, and since all translations completed at the Center are stored on a secure server, previous translations are used as templates for new projects, in essence decreasing the amount of time that translators have to

Technical Communication, Translation, and Design at a Non-profit Organization

spend recreating frequently used seals and images. For instance, Mexican state seals that have remained the same for decades are copied into new technical document translations repeatedly. However, as Holly explains in her description of “fixing seal graphic templates,” although the Language Services Department has this extensive library of translated seals, their insertion into documents still requires formatting and manipulation to completely mirror and communicate (to the best of the translator’s ability) the original document.

Translating seals, locating corresponding graphics, and formatting these final designs go beyond mere translation or design alone. Because technology plays an increasing role in globalization, designs, as David Womack (2005) describes, “still ha[ve] to pass through



Figure 1. Birth certificate seal from Tepehuanes, Durango, Mexico. The image on the left is a picture from the original birth certificate seal submitted for translation at the Language Services Department. The image on the right is a screenshot from the translated seal designed by a translator in the department. As evidenced in these two images, employees in the Language Services Department must translate the information contained in the seal (e.g., Central Archives of the Civil Registry) and must also include the images and logos in the translated document for reference. In this way, translators also act as designers in the translation of birth certificates, ensuring the usability of translated documents by providing mirror translations that can be clearly understood in both the original and the target language.



Figure 2. Educational Record Stamps from Cuba. The image on the left is a picture from the original education certificate submitted by the client. On the right is the image designed and translated by an employee from the Language Services Department. The translated phrase “stamped document” signals that the client paid the due taxes on her original document. This in turn provides added credibility to the translated document, indicating to the English reader that the educational record was submitted to and accepted by the Cuban embassy.



Figure 3. Birth Certificate seal barcodes and seals from the Dominican Republic. In recent years, government agencies have been providing ways for individuals to digitally verify the authenticity of technical documents such as birth certificates. Although translators cannot recreate digital barcodes on birth certificates and other documents (as depicted in Figure 3), it’s important for translators to still place barcodes and their corresponding verification numbers in the right position on finalized documents. In this way, government agencies can verify the validity of these technical documents via a verification number (such as the “event number” pictured above).

a layer of code that inevitably spit out something that bore only a passing resemblance to my original creation” (p.189). Here, instead of designs facing code alone, designs face the weight of authority across languages, countries, and legal institutions. Thus, translators in the Language Services Department are not only translating or designing, they are always doing these things all at once, in addition to designing for an experience that is deemed “authentic.” In the following section, we will elaborate on the interactions between design and translation in the Language Services Department, particularly when considering the various tools and platforms mediating these activities.

Data narrative 2: Translating and designing across tools

Although many of the translation activities executed by the Language Services Department entail verbal interpretation between service providers and community members, all written translations in the office entail the use of digital resources and platforms. For this reason, translators working in this department are required to navigate a wide range of digital tools and platforms. In fact, technological advances have significantly influenced the role and required qualification of translators, both in and outside of the US (Lyons, 2013). As Lyons (2013) elaborates, in the case of medical translation, translators adopt digital tools for many purposes, including:

- Creating templates and processing data uniformly to leverage for future use
- Improving the efficacy of data processing to save time and money
- Standardizing data capture so that modifications can be implemented in real time
- Providing data that can be retrieved instantly to safeguard patient safety further and improve public health drug safety monitoring (pharmacovigilance).
- Minimizing human error and omissions to ensure data accuracy and prevent data loss (pp. 19–20).

The use and adaptation of digital tools, as evidenced in the previous data narrative, is a frequent site of interaction for translation and design activities in the Language Services Department. Although digital tools are vital for short technical translations, such as birth certificates, the diversity of these tools only increases in more complex and extensive translation projects.

During our data collection period, the Language Services Department received a 7-part (127 pages total) document translation request from a local institution. This institution sought to have these documents available in English and Spanish on their website so that members of the Latinx community could utilize their services. In particular, the institution aimed to provide resources (in both Spanish and English) to help community members understand and navigate through home foreclosure processes. This translation consisted of an entire website with hyperlinks to external content.

When the Language Services Department originally received this translation request, we observed a conversation between the director, Sara, and the translator, Holly, where they discussed the value of this project: “This is a great resource for our people,” said Sara, “they can really use information on foreclosure.” Holly, a translator for the organization and the person in charge of delegating translation projects, immediately replied, “Yes, but *how* are we going to do it?” (emphasis in original).

To complete this translation request, translators had to not only complete mirror translations, which include formatting and designing to match the original website, they had to delegate discrete translation and design activities to different team members as well as design the translations with the end users, client, and Web developers in mind. Thus, the translators engaged in multiple, overlapping activities normally undertaken by specialized project managers, translators, user experience designers and Web developers. Since the Language Services Department is a small, low-budget office, and since translators for the organization are trained bilingual community members who typically do not have extensive professional training outside of the office, technical equipment (e.g., design software) is not readily available. Instead, translators have to work with limited word processing software (i.e., Microsoft Office) to complete all projects.

Figure 4 illustrates how translators moved across activities and interactions in their completion of this extensive project. To provide a more nuanced understanding of the processes at work in this project, we 1) identified the interactions and roles between client and translator, 2) identified acts of technical communication in a translation project, 3) tracked those actions over time, and 4) illustrated overlapping acts of technical communication by labeling acts with specific primary

Technical Communication, Translation, and Design at a Non-profit Organization

colors (red, yellow, blue, and gray). Because each process at work below is often classified not as a single distinct act of project management (red), translation (blue), UX design (yellow), or visual design (gray), the processes in the diagram below take on multiple, blended color representations. For example, “formatting documents to match layout and color” is a pale yellow to represent that process as both ux (yellow) and visual (gray) design. “Reformatting part one” required translators to participate in actions of translation (blue), UX design (yellow), and visual design (gray), and so is represented with a light green. “Generating a quote” requires both translation work (blue) and project management (red) and is thus depicted as purple. The purpose of this color blending is to illustrate the complexity of these processes and their interactions.

As Figure 4 illustrates, completing this 7-part, 127-page project required over 125 hours of in-house

project management, translation, UX design, and visual design work. In addition to translating technical language about home financing and foreclosure, the 4 translators who worked on this project had to negotiate roles as project managers and designers. For instance, the 127-page file was initially delivered to the office as a PDF document (see Figure 5). Later, after a client conversation regarding formatting and style, the document was re-submitted by the client as an editable Microsoft Word file. Translators then worked on this editable Word file to complete and format the initial translation, taking into account visuals that could be seen directly on the document in which they were working. However, three weeks into the project (after all the language translation had been completed), the client contacted the Language Services Department to request that the content be re-formatted into a file format that would make the content suitable for transfer into Web

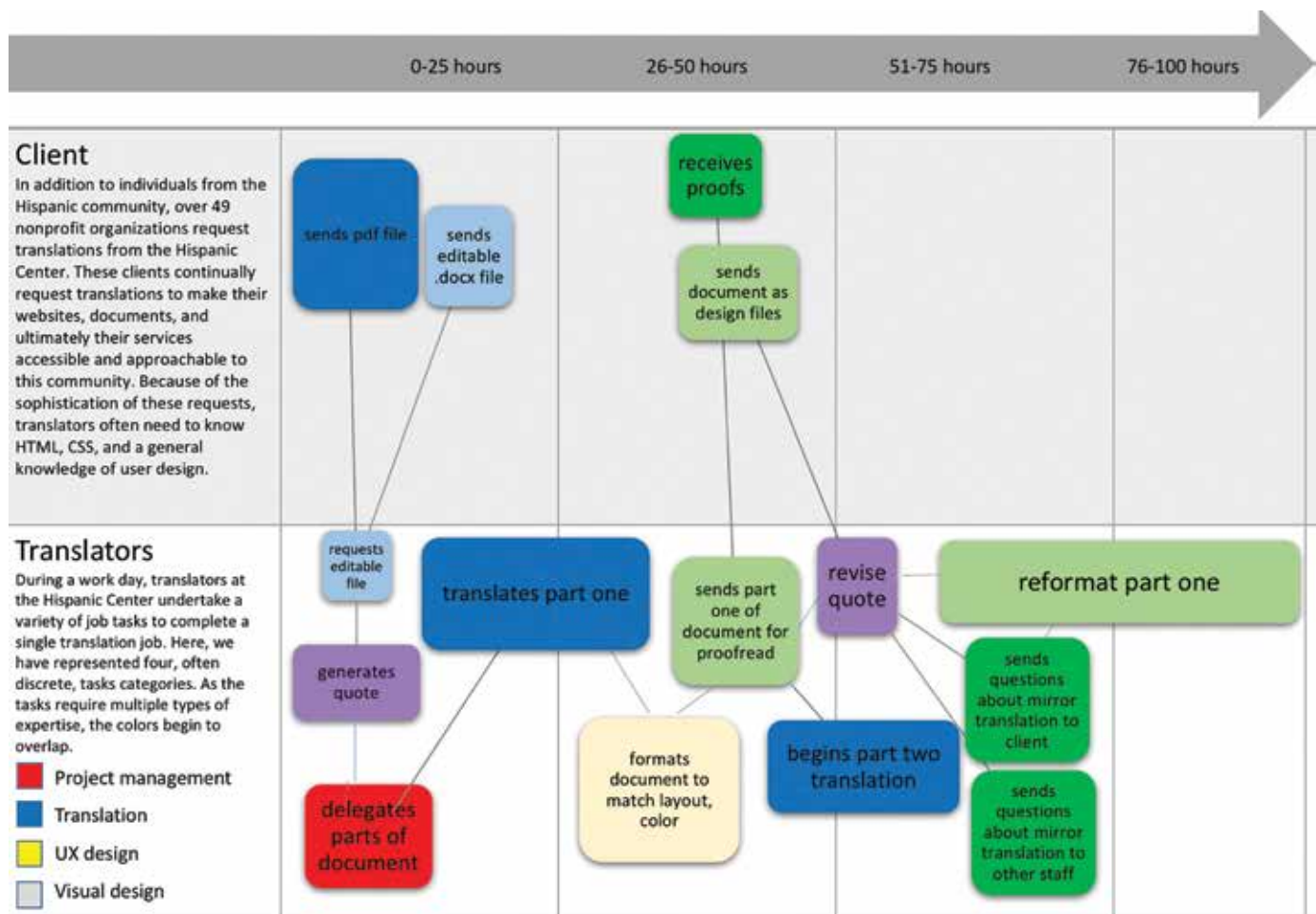


Figure 4. Translation project work-flow

publishing (see Figure 6). As Figure 6 illustrates, this last-minute re-formatting, which facilitated Web design and online accessibility, resulted in an additional 50 hours of work for translators in the Language Services Department. This is because, as shown in Figure 6, the formatting update requested by the client required Web coding knowledge (marking spaces, headings, etc.) that was not readily available to participants in the Language Services Department. In turn, in order to complete this reformatting, translators had to learn to navigate new software (i.e., SDL Trados—a popular digital translation tool), while simultaneously keeping in mind how this new translation format might impact Spanish-speaking readers aiming to understand the content in the finished project. As Figure 6 illustrates, reformatting this document required translators to understand how English content was segmented in the original version and to then develop a way to similarly break up Spanish content in a way that would fit within the specified parameters of the new format.

Figures 5 and 6 contain the same language that needed to be translated for this client. However, as the two images illustrate, the formatting and design of each document is dramatically different. Figure 6 contains a file format that will facilitate accessibility and design on the side of the client developer, where information is broken into line segments with embedded code that will transfer into the document design published online. The image in Figure 5, on the other hand, represents the original PDF document submitted to the translators. This initial PDF file was used to provide a quote and a time estimate for the clients of this project, who later asked for the translation to be transferred into the format displayed in Figure 6.

During an interview with Sara (the director and one of the translators on this project), she explained that the updated file format

“was challenging for our office . . . we had to think of new ways to translate information, even though we had already technically completed the translation in the first file version. The purpose of this new format was to publish something on the web, which was not clear to us in the original version. This completely changes the translation because now we have to think about words *and* space, numbers [with the line segments] *and* letters, all while keeping our community in mind



Figure 5. Initial PDF document submitted for translation. The content presented in Figure 5 allowed translators to see how information would be presented to the target audiences. Translators working in this document could see the images and space limitations, and could make translation choices based on these parameters.

and thinking about how they would be using their information (emphasis added). We can't send them to a hyperlink that is not translated, or break up a title just because there is a picture in between the words. We have to think of ways to redirect the information so that it's available and understandable to them in their language. It's not just about replacing words.”

Sara's reference to the shifting roles of translators within the Language Services Department, through her discussion of “words and space, numbers and letters,” reflects the constant flux of activity that participants in this organization must undertake to successfully complete a large-scale translation project.

Because the translators in the Language Services Department are the user-experience experts when it comes to Spanish-speakers, they are the only ones who can understand how Spanish-readers might navigate information differently than those who can

Technical Communication, Translation, and Design at a Non-profit Organization

48____	Not Translated (0%)	<181/><182/>Welcome to the Starting Over After Foreclosure Toolkit	<181/><182/>Welcome to the Starting Over After Foreclosure Toolkit
49____	Not Translated (0%)	This toolkit is designed to help people who have been through home foreclosure or are now in the foreclosure process to rebuild their financial lives.	This toolkit is designed to help people who have been through home foreclosure or are now in the foreclosure process to rebuild their financial lives.
50____	Not Translated (0%)	There are eight distinct units available for use in this toolkit.	There are eight distinct units available for use in this toolkit.
51____	Not Translated (0%)	They are:	They are:
52____	Not Translated (0%)	Getting a Fresh Start After Foreclosure	Getting a Fresh Start After Foreclosure

Figure 6. Re-formatted version of document submitted for translation. In the re-formatted version of this project, information is broken into line segments. Translators working with this document don't always have a reference point for how their words will be positioned within the context of an entire document. That is, employees have to translate phrases such as "They are:" without knowing what "they" is being referenced and where the word "they" may be placed within the text. This increases complexity in the translation process.

read the information in English. The line segments and text breaks embedded in the reformatted file were created with English-speakers and readers in mind, which meant the translators were left to make decisions about how these formats could impact their audience. Although translators in the Language Services Department are not formally trained in user experience or Web development, as Sara demonstrates, these participants are the ones with the user expertise in these instances, even when working with Web developers and content designers who have many more years of experience in digital publishing. In the following section, we will elaborate on the role of translators as user-experience designers in the Language Services Department.

Data narrative 3: Teaching translation and UX design

Since the Language Services Department's "three-tiered approach to community engagement" lends itself to a focus on professional development, many of the translators in this organization participate in

outreach activities within their community. During our observation period, two translators in the Language Services Department (including one of the authors of this article) co-taught a Spanish language class provided to city employees in the City of Grand Rapids. This six-week Spanish course was designed to provide city employees with some useful resources for interacting with Spanish-speakers in the community. The course consisted of 28 students who worked in various city offices, including the office of human resources, the code compliance and city inspection office, the local police department, and many others.

While the discussion of the course itself is beyond the scope of this article, materials used during the class provided interesting translation projects that were brought into the Language Services Department. Rather than teaching traditional conversational Spanish, the two translators teaching this course asked students to think about the specific information that would be shared during a typical interaction with a Spanish speaker. For example, the image depicted in Figure 7

illustrates how one student, Zac, described interactions he would typically engage in with his clients in the City Department of Human Resources.

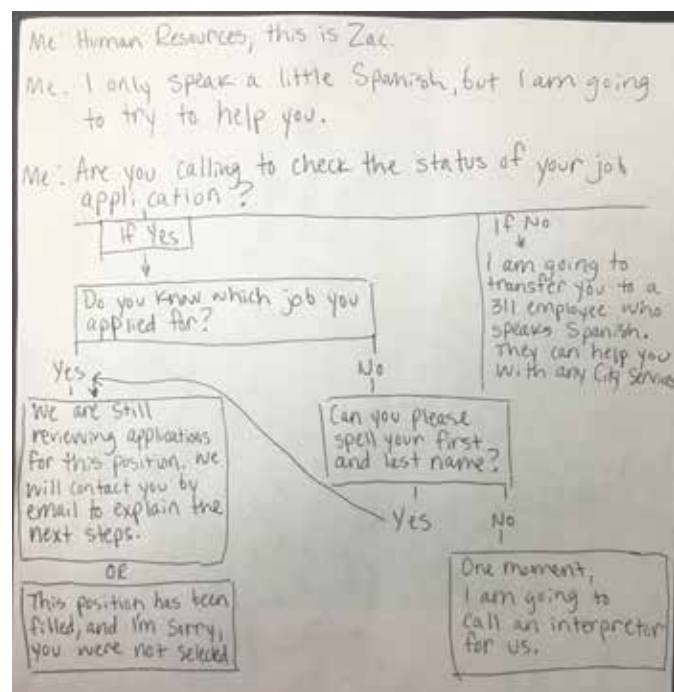


Figure 7. Conversation diagram for human resources student

As Figure 7 illustrates, students in the Spanish course facilitated by the Language Services Department began class by thinking about how information is delivered to users rather than by focusing on language and translation alone. After students developed their conversation diagrams (such as the one depicted in Figure 7), the translators who served as course instructors brought the diagrams into the office to provide a translation. Students then spent the remainder of the course practicing the translations provided by the Language Services Department. Translating conversation diagrams for students in the Spanish Language class required that the translators/course instructors and the students worked together to determine how information could be best presented to Spanish-speakers users in the community.

In collaborating with a student who works as a home inspector for the city, the translators/course instructors worked to develop a dialogue translation that would facilitate interactions between the home inspector and the tenants/home owners visited during inspections. During the course, the student/home

inspector mentioned that “it would be great to just be able to point at something” during his interactions with community members. For this reason, rather than translating a dialogue and key words alone, the course instructors/translators provided this student with a visual diagram, as depicted in Figure 8.

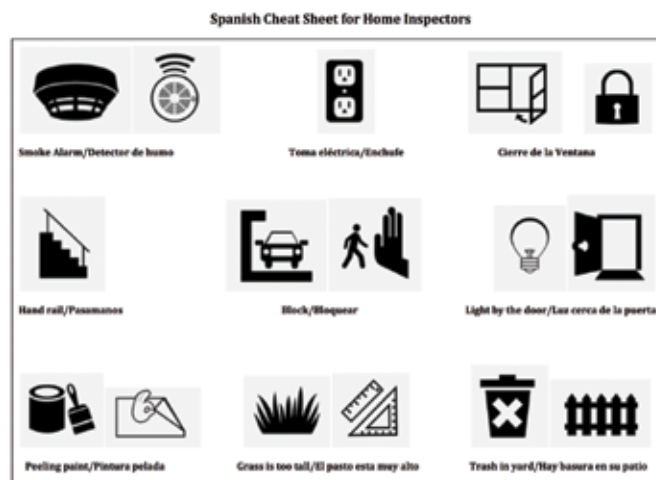


Figure 8. Visual Spanish diagram for home inspectors

As evidenced in Figure 8, translating information for students in the Spanish language class required the course instructors/translators to account for design, multilingual content, and user experience as they developed ways to present information for Spanish-speaking community members in their city. By moving across these activities, employees in the Language Services Department helped city employees learn Spanish while simultaneously providing materials that could enhance the experience of Spanish-speakers interacting with employees of their community.

Discussion

This study has illustrated the processes of translation and design as they converge in the technical communication of multilingual content. Specifically, we found that in general translations, designing documents occurs and reoccurs at multiple stages of the translation process, as documents flow from client to translator, to the Web, and then to community members. This movement requires that multilingual practitioners use a wide range of skills and knowledge, often outside the traditional understanding of their role as translator or technical communicator, in order

Technical Communication, Translation, and Design at a Non-profit Organization

to complete the tasks that their jobs as translators and technical communicators now require. We then illustrated the material realities (e.g., resources, staff, training) that practitioners face daily and showed how these realities influence the execution of successful translation and design in technical communication. These material realities result in translators who embed practices of technical communication, document design, and user experience within their own responsibilities, moving away from the practice of separating these practices into specialized roles of industry teams. Although translation, design, and technical communication can occur separately, this study suggests creating multilingual content that is accessible to diverse audiences requires complex skills and strategies that work across translation, design, and technical communication.

As the field of technical communication (particularly in the US) continues to acknowledge the value of global, multilingual content, it's important that we highlight the expertise and added value of the multilingual communicators who make this work possible and accessible to users across cultures and languages. For participants like Sara and Holly, designing multilingual content is not just about translating words; rather, it is about providing accessible, effectively designed and user-friendly content for their Spanish-speaking community. Because multilingual professionals like Holly and Sara are part of the community they are trying to serve (being multilingual immigrant learners themselves), creating multilingual content in this organization reflects an added level of investment that frequently results in additional labor (e.g., learning new technologies, understanding government regulations for translated documents). As the field of technical communication continues to push for globalization and for the creation of cross-cultural, multilingual content, we suggest that researchers, practitioners, and teachers both acknowledge and compensate the intellectual contributions of multilingual communicators, particularly those like Sara and Holly who work within the constraints of the non-profit sector.

Creating accessible, multilingual content requires added time, resources, and training that could be more effectively highlighted in U.S.-based technical communication research and pedagogies. For many years now, researchers have been acknowledging

technical communicators' goal as that of "mak[ing] even complex interactions understandable and usable" (Redish & Barnum, 2011, p. 92). As the complexity of technical communication work continues to increase through the creation and dissemination of multilingual content, valuing and listening to the experiences of multilingual communicators like those mentioned in this study will be increasingly valuable.

Conclusion

Although this study provides just one illustration of how translation, technical communication, and design activities converge in a language services office, these connections have been ongoing in international organizations for quite some time (Aykin, 2004; Ding, 2010; Maylath, Muñoz Martín, & Pacheco Pinto, 2015; Brejcha, 2015; Ding & Li, 2016). Indeed, the field of technical communication is still emerging in international contexts. Yet, translators, localizers, and user-experience designers are in high demand within these populations, particularly in non-Western countries. For example, in her analysis of tech writing positions in China, Ding (2010) explains that employers in non-Western cultures tend to "put more stress on translation and interpretation than on technical writing" (p. 311). As Ding (2010) explains, the lack of specific jobs calling for technical communicators in China does not mean that the field of technical communication does not exist in the country. Instead, this work "clearly demonstrates the importance of translation in the centralized curricula for English majors" who seek to do technical communication work (Ding, 2010, p. 312). In turn, based on our data, we also suggest that the field of technical communication in the US could also benefit from placing added value and emphasis on translation and on the development of user-centered multilingual designs. It is no longer enough for technical communicators to know how to write and edit for English-dominant audiences (Aykin, 2004; Brumberger & Lauer, 2015; Lauer & Brumberger, 2016). Instead, technical communicators must also be agile information designers, user-experience researchers, and visual communicators who can address the needs of cross-cultural audiences in various contexts. As we continue training technical communicators to navigate cross-cultural, multilingual settings, listening to and

learning from the expertise of professionals like those in the Language Services Department can help us (and our students) more effectively contextualize the purpose, execution, and impact of this work. Data from language service providers such as those highlighted in this study can help technical communication researchers, teachers, and practitioners both understand and prepare for the realities of enacting effective technical communication across languages, cultures, and contexts.

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Technical Communication, Translation, and Design at a Non-profit Organization

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Crossing the Divide: Implications for Technical Communication User Advocates

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Abstract

Purpose: Technical communication practitioners and scholars need to push the boundaries of user experience scholarship to develop more culturally sensitive design and research methods that address global digital divides. In this spirit, I examined the local ways in which community technology center (CTC) tutors helped teach inexperienced users how to use information and communication technologies (ICTs) during basic computer courses.

Method: I collected data through ethnographic methods including participant-observation, qualitative interviews, and extant documents. Using grounded theory (Charmaz, 2006; Glaser & Strauss, 1967; Strauss & Corbin, 1990), I developed open codes and constantly compared codes to develop categories and properties.

Results: Inexperienced ICT users are unable to utilize online and other resources because they often lack the necessary physical experience working with ICTs and the cultural knowledge to operate them. CTC tutors serve as local technical communication experts who construct effective methods for helping learners by: 1) utilizing visual representations, 2) utilizing audible representations, and 3) heightening learner awareness for visual cues.

Conclusion: Inexperienced users struggle with using ICT hardware and software. An on-the-ground approach to studying usability in the field makes user experience research both more inclusive and comprehensive. Such insight from inexperienced users sheds light on how digital inequalities persist and how practitioners and scholars can work to ensure inexperienced users are not forgotten in UX research.

Keywords: user experience (UX), community technology center (CTC), information and communication technology (ICT) users, digital divides, ethnography

Practitioner's Takeaway:

- Inexperienced ICT users often lack confidence in using ICTs because they lack experience using them and have not accumulated ICT cultural knowledge. For instance: 1) tutorial resources are useless if users cannot use the mouse, and 2) design features woven into interfaces are not intuitive.
- Technical communicators should seek local ways of using ICTs by conducting fieldwork to develop more nuanced understandings of inexperienced users and the forms of technical knowledge tutors pass on to users.
- When designing informational resources, technical communicators should consider novice ICT user experiences and create public service sites that are user- and mobile-friendly.

Implications for Tech Comm User Advocates

"I wanna get there so I can be able to stand up on my own feet knowin' that I can do this. Accomplished sayin' I can use the computer on my own, not just only get stuck."
(Roxanne, learner participant)

Though usability and technical communication have a long history (Redish, 2010), such research typically focuses only on the experience of seasoned information and communication technology (ICT) users and for only a short amount of time. To add to the landscape of usability and user experience (UX) scholarship, I present findings from a situated study of inexperienced ICT users, providing crucial insight into digital disparities. The learner participants in this study attended a community technology center (CTC) located in a public library branch where they took free, introductory computer and Internet classes. They demonstrated an undeniable eagerness to learn but a lack of confidence as they faced challenges when trying to go online and utilize unfamiliar hardware. Though websites offer well-intentioned tutorials aimed at inexperienced users, the helpfulness of these sites is limited when users have never placed their hand on a mouse. Insights from participant learners at the CTC highlight important usability issues that allow digital inequalities to persist.

In this study, CTCs refer to public computer labs made available to community members so they can access computer applications and the Internet for free. This is a little-explored site for technical communication research, offering an important setting for learning about how less-understood, inexperienced ICT users are working to develop their digital literacies. This knowledge is particularly important because little is known about such users within the field of technical communication, and designing for multicultural contexts requires knowledge of various ICT user experiences. The participants in this study are underrepresented in usability and UX literature based on ICT experience, age (many learner participants were retirement age), and race (Black). In line with Selwyn's (2006) work, this study provides an alternative to "stark dichotomous terms" (p. 275) that label users and to statistics that draw lines between income and level of ICT use. Rather, these findings provide details and examples from the front lines of digital divides, details that are only accessible through immersion with people at the field site. Such knowledge captures what it means to learn how to use ICTs without

the benefit of prior knowledge and what it is to teach learners how to use ICTs.

The value of localization approaches such as this one is well established within technical communication scholarship (Batova & Clark, 2015; Gonzales & Zantjer, 2015; Sun, 2006, 2012). More specifically, Sun (2006, 2012) argues that a user localization approach allows for a more detailed and contextualized account of how users utilize a particular technology within their own cultural context. These cultural practices shed light on what is relevant and valued to a group of people, which is crucial information when seeking to understand user goals and motivations. User localization requires attention to audience, a familiar skill to technical communicators (Redish & Barnum, 2011). Further, technical communication's roots in rhetoric (Peeples & Hart-Davidson, 2012) position practitioners and scholars particularly well to contribute to improving user experiences. Despite the field's efforts to better understand users and their cultural practices, there is still work to be done to expand how we approach culturally sensitive design and research methods to better serve global ICT users. For instance, rarely are the perspectives of novice ICT users sought out and viewed as valuable contributions for usability studies. If technical communication practitioners and scholars are going to work as user advocates to develop more culturally sensitive design and research methods for confronting global digital divides, they must look to the perspectives and experiences of those with less-privileged information and communication technology (ICT) access.

In this article, I present a portion of findings from a larger study focused on the ways in which technical communication is engaged by learners and staff members at an urban CTC. Because the user-participants for my study are predominantly working toward functional literacies (Selber, 2004), their interactions with tutors reveal little-explored and needed perspectives of the challenges users face when they are first learning how to use a computer. Further insight on instructional strategies and user interfaces for novices are gained and the limitations of these resources are brought to light. The particular field setting of the CTC also played a role in revealing these types of findings. For example, my findings show how CTC tutors play critical roles as they provide needed contextual information to learners while learners are

developing their digital literacies—an insight that may not normally be revealed in a controlled lab.

This study contributes to user experience and technical communication scholarship by presenting important, local cultural practices displayed through interactions at the CTC in a setting that diverges from well-funded usability labs or business environments. Findings from this research provide technical communication user advocates examples from the field on how to understand the usability aspect of digital divides, revealing that obstacles such as orchestrating the mouse, interpreting icons, or recognizing what features of an interface are clickable are significant barriers preventing inexperienced users from using ICTs independently. Digital divides will persist if these particular user needs are not addressed.

Review of Literature

Community technology centers (CTCs)

Previous research has portrayed CTCs as sites for contending with the digital divide (Davies, Pinkett, Servon, & Wiley-Schwartz, 2003; Salovey, Williams-Piehot, Mowad, Moret, Edlund, & Anderson, 2009). In a 2003 report to the Ford Foundation, Davies et al. (2003) note that they are often “located in disadvantaged neighborhoods with rapidly changing demographics” and they “are important not only because of their specified digital divide work, but also because they act as key public spaces in areas where there is a dearth of such community places” (p. 4). They categorize CTCs as typically being non-profit, community-based organizations that offer information technology (IT) to people that are unable to access it. Davies et al. differentiate between three different types of CTCs that vary in terms of their organization. One is a stand-alone center where IT needs and access issues are addressed. Other CTCs are located in multi-service agencies and are part of a larger organization that offers programming to the public such as a public library, YWCA, or community development council. A third type of CTC could be part of a larger network of CTCs, such as the Austin FreeNet, a network home to 34 centers. The CTC focused on in this research, referred to by the pseudonym Urban CTC, is a multi-service agency located within a public library branch.

From usability to UX design

Technical communication and usability have an expansive history, which Redish (2010) dates to at least the 1970s. Drawing from Redish and Barnum (2011), usability means “that the people who use (or should use) what you develop can find what they need, understand what they find, and use what they find to meet their needs” (p. 93). Duin (1993) affirms that “*usability* is the degree to which an intended audience can perform the desired tasks where those tasks are usually performed” (p. 308, emphasis in original).

Initial areas of usability for technical communicators focused on documents such as brochures and regulations. In the 1980s, the advent of computers brought with it new types of usability work, and usability labs emerged as an option for testing user experience. Researchers would “construct an environment like that of the intended users and watch them use the product and its information” (Duin, 1993, p. 308). Eventually, a move to “user-centered design” (Redish, 2010, p. 196), or UCD, occurred, which involved a preference for a more in-depth approach or “deeper infusion” (p. 196) of usability work into the design process. According to Getto and Beecher (2016), UCD meant ensuring the requirements of users remained at the core of design. Today, UX design is a more involved approach to design than usability and builds from UCD (Getto & Beecher, 2016). Central to the User Experience Professionals Association’s (UXPA) definition of UX is that it is “an approach to product development that incorporates direct user feedback throughout the development cycle (human-centered design)” (UXPA, 2016, para. 1).

Part of understanding a user’s experience in greater depth involves considering user needs and the cultural context of the user’s setting. User localization (Sun, 2006) is one approach for learning about cultural features that influence how users would actually use a particular product in their own context. Sun (2006) contrasts this with developer localization, which refers to the efforts developers make to tailor products. They may rely on generalizations of culture to localize, such as Hofstede’s cultural dimensions of power distance, uncertainty avoidance, individualism and collectivism, masculinity and femininity, and long- versus short-term orientation, which results in an integration of only “dominant cultural values” (Sun, 2012, p. 12). When this happens, other influential features that shape one’s life experiences,

Implications for Tech Comm User Advocates

such as gender and age, are overlooked (Sun, 2012). Because generalized cultural constructs for localization are limiting, Sun (2006) argues that localization practices must be expanded, stating, “we should move toward designing local technology with rich understandings of use activities in context instead of simply applying cultural conventions to localization work” (p. 474).

This study reinforces the need for user localization research and expands past UX design scholarship by learning from nontraditional user participants in their local setting. More specifically, novice users at Urban CTC are unlikely user participants because they may not want to be watched by experts or do not have time to participate due to other life obligations—that is, if a usability or UX researcher was to even reach out to these users in the first place. Such researchers may not explore an applied setting such as a CTC, making the insights from this study that much rarer and more valuable. Although anthropological data collection methods and usability studies have intersected in the past (Duin, 1993; Redish & Barnum, 2011), the contexts for these have often been business settings. Usability labs and field research in business environments are very different settings from CTCs for gathering information about user experience. For example, well-funded labs are designed to capture as much data as possible, equipped with high-tech equipment, such as eye tracking software. Another luxury of this setting is verbal feedback from the user through think-aloud protocols and interviewing. While many types of information can be gathered in these settings, these more formal contexts do not reveal the same type of user experience that is illuminated in a public space such as a CTC. In this uncontrolled environment, users choose their own tasks on a computer, are often working under time constraints, and are in a setting they cannot control (e.g., they make due with distractions, such as cell phones ringing, people talking, and babies fussing). In other words, there are stressors and distractions in this type of setting that may impact their ability to focus or learn that may not be present in a controlled environment. Because the setting of this CTC is different from a lab or business setting, different practices and perspectives can be observed by carrying out fieldwork in such a site. In essence, Urban CTC differs from traditional contexts in that the participants and the setting diverge from what has been explored in user studies before, providing new and needed insights.

Building culturally relevant and sensitive ICT resources

Sun (2012) describes the assumption that computer users recognize the U.S. American manila file folder as a meaningful and culturally relevant artifact. In reminiscing about her experience first using a computer, she recalled her uncertainty regarding the “small yellow rectangular icon on the desktop” (p. 3) and how she made the connection years later between that icon and an actual manila folder, common fixtures of U.S. office contexts, while attending graduate school in the US. Selfe and Selfe (1994) have also written about politics woven into interfaces and the cultural systems produced in these environments. They have argued that select computer users are reflected in computer technologies and, because of this, other users are marginalized and may have difficulty learning the organizational structures of the programmed interface. Selfe and Selfe (1994) state that, “interfaces are cultural maps of computer systems, and as Denis Wood points out, such maps are never ideologically innocent or inert” (p. 485). These scholars demonstrate that one’s own cultural assumptions and the assumptions designers have integrated into interfaces often collide, causing confusion and alienation from technologies.

In order to build culturally sensitive online resources for novice users, technical communicators must understand their struggles and, as scholars indicate, stakeholder feedback (Getto, Cushman, & Ghosh, 2011) and participation (Walwema, 2016) are crucial. As previously discussed, taking an approach of combining ethnographic data collection methods with a community-based setting is unique in usability research, offering meaningful insight into novice ICT users’ experiences. Recently, Walton, Mays, and Haselkorn (2016) critiqued the narrowness of technical communication’s business-related scholarship and called technical communicators to look to non-industry settings for insight into technical communication’s role in “work practices” (p. 86). My research offers one response to this call, focusing on user experience in a non-profit organization (CTC in a public library), an on-the-ground setting where technical communication work is conducted through interactions between CTC tutors and learners. I am reaching beyond business field settings and UX labs to meet users where they are and to improve user experiences for those who are historically underrepresented in UX scholarship. Such an approach

is needed to appreciate the experience of inexperienced ICT users and to develop more welcoming and accommodating designs and research methods.

Method

The goal of my overarching study, to better understand the technical communication texts and communication practices present at a CTC, is inspired by the central research question Rude (2009) describes as a common thread for the field of technical communication: “*How do texts (print, digital, multimedia; visual, verbal) and related communication practices mediate knowledge, values, and action in a variety of social and professional contexts?*” (p. 176, emphasis in original). This goal led me to collect data through participant observation, qualitative interviews, and extant documents. I wanted to learn from the perspectives of learners and tutors and wanted to better understand the resources drawn upon within the CTC. To do so, I served as a participant-observer for 10.5 months, volunteering nearly weekly, and conducted 21 interviews with 19 participants, interviewing some staff members multiple times. As a participant-observer, I served as a tutor by answering patron questions, teaching computer classes, and tutoring individuals one-on-one for computer help. Some of the field examples I present in this study are from my own experiences serving as a volunteer tutor and interacting with learners at Urban CTC. The subset of findings I present stem from learner and tutor interactions that I observed and recorded in field notes and memos. These findings illustrate the usability obstacles inexperienced learners encountered at Urban CTC and the ways in which tutors provided information to help learners use ICTs. As Sun (2006) notes, understanding local cultural practices can illuminate unique features of a cultural context, which is important for understanding technology use or non-use.

Urban CTC

The setting for my data collection is a CTC, known by the pseudonym Urban CTC, located within an urban, Southeastern U.S. library branch. A computer lab within this CTC housed 16 desktop computers, which patrons were allowed to use for two, one-hour sessions per day. Patrons were mostly free to use the Web and other applications on these computers. The CTC also contained several workforce computers, which were not

located in a lab. These included eight desktops located in the central, main area of the library, and two more by the outside edge of the library away from the more public main area. Patrons were allowed one, three-hour session on workforce computers each day, but their activities were restricted to job- and school-related tasks such as resume writing and homework. This library branch was notable in its system due to the high number of available computers for patrons.

Participants

The interview participants for my overarching study included library staff members and individual patrons who attended the library’s weekly computer classes or one-on-one tutoring sessions. In total, I interviewed 11 Black adult learners (10 women; 1 man), ranging in age from 50s to 80s, and eight (of 12) staff members. All the staff members I interviewed were women (seven Black, one White). I relied on interviewing learners after class and tutoring sessions, because I rarely saw them in the library outside of these sessions. This made scheduling interviews challenging when patrons had a bus to catch, family obligations, or another library course to attend afterward.

The patrons that came into the lab for classes had diverse motivations. Some learners wanted to become independent ICT users so they would not have to rely on others for help. Others wanted to develop their digital literacies so they could volunteer in their church or be more marketable for employment. Another learner cited wanting to engage in continuous learning and to stay updated on the technological changes she was observing. These ambitions brought them into a variety of introductory computer courses.

Data collection

I utilized ethnographic data collection methods that included field notes, memos, and qualitative interviews. I recorded my observations by taking handwritten notes on the curriculum booklets, a notebook, and scrap paper. After my volunteer sessions at the CTC, I typed up all of my notes and composed memos. I conveniently sampled participants for qualitative interviews by recruiting patrons in weekly computer classes. Before class started, I was typically introduced by one of the staff members teaching class and then had an opportunity to provide a brief overview of what I wanted to talk to patrons about. Those who

Implications for Tech Comm User Advocates

were willing would approach me after class, though in some instances I asked eligible participants if they were interested after class had completed. I recruited staff member participants by asking them in person when I was in for my volunteer shift. I followed Weiss (1994) for conducting qualitative interviews and structuring an interview guide that I used during interviews. I adapted my interview guide throughout my data collection process to account for whether or not I was interviewing a patron or staff member. When interviewing patrons, I asked them about their motivations for and experiences with attending the CTC classes. Such questions included: why they were attending the computer classes, what their goals for learning to use computers were, how they made use of the curriculum resources in classes, did they observe networking between people in their classes, and what types of writing did they do while at a computer in the CTC. For staff members who taught computer courses, I structured their interview questions around their experiences teaching: what brings them to teaching the classes, what are their perceptions about patron motivations for attending classes, and did they observe learners writing in the classes. I also interviewed staff members who did not teach classes, and my questions centered on their experiences helping patrons at the workforce computers and sometimes on their personal devices (e.g., frequency at which they helped patrons, frequently asked questions, and types of help extended). I recorded interviews on two audio recording devices, an electronic audio recorder and my smartphone, and used both to replay the audio for transcribing. This proved exceedingly useful, as sometimes when speech was hard to make out on one device, it was easier to understand on the other.

Data analysis

I took a grounded theory approach (Charmaz, 2006; Glaser & Strauss, 1967; Strauss & Corbin, 1990) to analyze my data, utilizing constant comparisons to develop codes and categories. The data sources for my overarching study included field notes, memos, interview transcripts, and extant documents. For the aspect of the study I present here, I draw from my field notes and memos regarding my time as a participant-observer at Urban CTC.

When open coding, I followed Charmaz's (2006) guidelines for coding incident-by-incident. Because

this process yielded numerous codes for what I was observing at the CTC, I began what Strauss and Corbin (1990) call "*categorizing*" (p. 65, emphasis in original) my codes to get a sense of which incidents or codes in my data were similar and could be grouped together into provisional categories. I chose to focus on codes regarding how tutors helped learners in the CTC because these interactions were theoretically relevant (Glaser & Strauss, 1967) to my overarching study. Additionally, the number and variety of examples of data regarding how tutors were helping learners inspired me to focus on such data points.

I further developed this category of "how tutors help learners" by going back to my data and comparing instances of how this was happening. In particular, I kept track of examples for how tutors were helping: they assisted learners with adjusting to the cultural context of ICTs by telling them about online security features; they helped them learn to use hardware, such as jump drives and the mouse; they pointed out where the menu button is in Google Chrome; they helped patrons with logging into their email accounts; and they explained how to print at the CTC. Keeping track of these examples allowed me to see a bigger picture of all of the different ways learners receive help from tutors at the CTC. From there, I noticed that tutors were often helping learners navigate visual obstacles within ICT interfaces (e.g., how to tell which browser one was in) and how to use the mouse and keyboard (e.g., how to rest one's hand on the mouse). When writing about these particular help-related interactions between tutors and learners, I labeled, or categorized, them as instances of CTC tutors serving as technical communication experts, because they were extending technical knowledge to learners for how to use ICTs. Two aspects, or properties, of this category are presented in this study, which include the specific ways tutors help learners by constructing visual and audible representations and the ways in which tutors point out the visual details or cues across ICT interfaces.

Results

Through this study, I found that CTC tutors are local technical communication experts who are skilled at identifying the needs of inexperienced ICT users and at constructing effective methods for helping them advance their digital literacies. Practices they deploy

reveal that inexperienced users lack foundational, contextual knowledge needed for operating computers, such as how to use a mouse or how to navigate online interfaces, knowledge that is absolutely required to operate ICTs. Tutors help learners by constructing visual and audible representations and by serving as visual cue experts who heighten learners' awareness of such cues.

Tutors utilize representations: Visual and audible

Tutors shed light on visual cues on screen and assist novices with physically manipulating computer hardware. They serve as local technical communication experts by providing audience-appropriate examples for learners off screen using visual and audible representations.

Visual representation Visual representations are in-person, off-screen examples provided by tutors. CTC tutors occasionally point out where one's thumb, index, and middle fingers are supposed to rest on a mouse for a desktop computer. In one course, a staff member physically placed his hands on a mouse to show a learner where one's palm and fingers rest. The student watched intently and mimicked what the staff member did with his hands as he learned how to place his fingers on the mouse. This physical representation offered the learner an example that was not screen-based. Furthermore, the learner could try and mimic it simultaneously, offering him an opportunity for immediate feedback. Without being able to manipulate a computer mouse, learners are unable to access the resources that ICTs offer.

In another class, Susan, a pseudonym for one of the CTC tutors, used her hand to mimic the actions of the mouse cursor to show the learner how the mouse's image would change when it was moved over the address bar in a Web browser. The learner was unaware that the mouse would be in the shape of a white arrow when it was over an area of a webpage where text could not be entered and that it would change to a cursor when the mouse was over an area where text could be entered. To explain this transition from arrow to cursor, the staff member created a visual representation of an arrow with her hand by piercing her four fingers together and sticking her thumb out. This real-time visual representation for the learner functioned as a quick example so the learner could know what to expect when moving the mouse around the browser interface. It may have been easier to see than deciphering the

change on screen because it was presented on a larger scale. For inexperienced users, especially those who are older, noticing such subtle nuances can be challenging. As McKee and Blair (2007) indicate, older users may be subjected to additional physical and material obstacles because of their financial and health situations. Visual representations offer learners a way to learn about a computer concept without having to refer to something on the screen of a monitor. For inexperienced ICT users, visual representations provide crucial mechanisms that allow them to actually use the hardware.

Audible representation Learners also have to gain familiarity with the pervasive "double click" in order to open programs with the mouse. The second type of representation I observed at the CTC is an audible representation, which occurs when a tutor mimics the sound of the hand-held computer mouse clicking. For users who have not had the chance to train their hand, learning to double click the left button of a standard, two-button, hand-held mouse is hard. They have to ensure their right index finger is on the left button and that it clicks at a rate that the computer can understand as an effective "double click." For those just beginning, a click and hold is often followed seconds later by a second click, rendering their efforts useless. Tutors utilize an audible representation to simulate the mouse clicking. They say, "Click-click" rapidly to convey how fast learners have to do this action. An audible representation is a way tutors can convey the sound the mouse should make so learners can grasp the rate at which they need to click. This is a creative way tutors transfer the embodied knowledge they have built up over time through experience using a mouse. When tutors mimic the sound the mouse should make, they quickly transfer this embodied information in a way that does not require the tutor to remove the learner's hand from the mouse or the learner to look on screen. This audible message provides a sound template that learners then try to match by pressing the button with their index finger. Having learners do this on their own gives them the opportunity to practice it themselves and teach their body how to make the hardware work for them.

These two types of representations, visual and audible, are unique strategies allowing tutors to present examples that are not screen-based. Representations at the CTC deliver information about visual cues and deliver information about how to physically operate computer hardware by providing material, non-screen

Implications for Tech Comm User Advocates

examples, which are useful strategies for teaching inexperienced users. Across these examples, tutors are serving as local technical communication experts. They adeptly intervene when learners are struggling with understanding visual nuances of unfamiliar interfaces and they find unique ways to make visual cues or hardware obstacles less challenging. Equipped with knowledge about the inexperienced users that visit their library, they teach learners how to interpret multimodal messages in localized and effective ways. Subtle visual cues and nuances across interfaces are often overlooked obstacles by experienced users, but yet they serve as real barriers to novice users, preventing them from taking advantage of online and other resources.

Tutors as visual cue experts

Tutors at Urban CTC also serve as visual cue experts by utilizing a variety of techniques for helping learners manage interface usability obstacles that show learners what visual cues to look for on screen. The course curriculum at the CTC calls tutors to inform learners about online security. Susan assisted learners with raising their awareness of the visual cues for online security by providing an example of online bill payment. To teach learners about safely conducting online transactions, she explained how and where to look for an icon in the shape of a lock and to look for an “s” at the end of “http” in their Web address by going to Amazon.com and taking the steps necessary to purchase a product. Without the critical knowledge of how to look for visual security indicators, inexperienced users are especially easy targets for crime, making CTC tutors valuable resources not just for Selber’s (2004) notion of functional literacies but for critical literacies as well.

Lacking knowledge of visual security cues poses further risk when inexperienced users attempt to navigate online account security technologies. As I was assisting patrons by the workforce computers, a middle-aged couple was at a computer trying to reset an account password. They asked me what the green line meant underneath the password, and I explained that this was a way for the company to indicate the password’s strength to the user. This particular interface did not include alphabetic text (e.g., green line paired with “strong”) to convey the strength of the password, a feature that would have been helpful to this couple. Novice users are at risk of becoming victims of

fraudulent activity when they lack an understanding of the visual cues associated with password protection. Each day, tutors at Urban CTC extend important contextual details about using ICTs that learners need but have a hard time accessing elsewhere.

A third example of how staff members help raise awareness for visual cues involves teaching learners how to type a Web address into the address bar. During a class, Susan directed learners to the curriculum booklet, which offered a list of Web addresses and brief descriptions. Learners were to practice typing the addresses into their address bar. Applying her localized knowledge from years of experience teaching users at Urban CTC, Susan identified that novices in her previous classes would type in the colon after “.com” and informed learners that they should not type this into the address bar (See Figure 1).



www.youtube.com: A popular site for viewing videos

Figure 1. CTC curriculum booklet URL

Susan knew her learners had not yet been taught the basic conventions for a Web address. Without this knowledge, finding resources for learning how to use a computer online is that much more difficult for learners.

Yet another way that tutors informed new ICT users of the visual nuances of interfaces was by explaining how to activate program windows and textboxes. Inexperienced users are often unaware that they need to click on, or activate, the window of a program and textboxes in order to be able to use or type in that program. For instance, in a Microsoft Word Basics class, one of the tasks the tutor was guiding learners through was learning how to use the vertical and horizontal scroll bars. When learners did not have the Word document activated, they had no way to manipulate the scroll bar. An inactivated window in Microsoft Office 2013 does not show the horizontal and vertical scroll bars, and the document’s name and additional features for expanding or constricting the window size are also muted in gray. These subtle visual cues often go unnoticed by inexperienced users, so tutors inform and remind learners to click on the program window to work in a program or edit. Figure 2 notes the features of an inactivated Microsoft Word 2013 window.

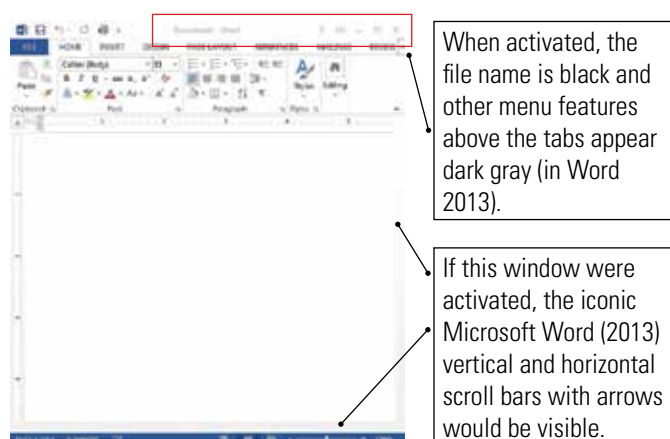


Figure 2. An inactivated Microsoft Word 2013 window

Struggles such as these occur not only with program windows but with textboxes as well. During one of the PowerPoint classes I taught, I explained the visual differences between an activated and inactivated textbox, illustrating that an activated text box has dotted lines around the textbox and white squares for adjusting the size or angle of the textbox. By helping learners see what it looks like to have a textbox activated (see Figure 3) and showing them that clicking on textboxes is necessary for communicating with the computer, tutors again serve as visual cue experts.



Figure 3. Activated textbox in PowerPoint 2013 with dotted lines and adjustment squares

Tutors also guide learners to look for visual cues that can orient them to what programs they have open. For example, when observing an Internet Basics course, one of the learners asked the lead instructor how to tell which browser she was in (both Internet Explorer and Chrome had been talked about in class because they were available on the computers). Susan told learners to look for the “blue E” for Internet Explorer (IE). By using color and a description of the IE logo, Susan demonstrated that she was aware that a new learner may

not have the visual knowledge of browser icons and that describing the logo was a way to help the learner build familiarity. When learners have little experience using an Internet browser on a desktop computer, the visual nuances that seasoned users understand are hard to notice. Tutors know that icons can appear in different locations on computers (e.g., desktop, menu bar) and are sometimes hard to decipher. They know that alerting learners to the visual features of such an important fixture of computers is central to users’ ability to utilize ICTs.

Visual cues matter to ICT users. When they lack knowledge of them, using interfaces is confusing or debilitating. Because inexperienced ICT users are often unaware of such meaningful features integrated across interfaces, the cues make ICT use challenging. This can prevent inexperienced users from composing their own documents for job applications, sending and receiving emails, or searching for economic or health-related resources online. Therefore, the role CTC tutors play as visual cue experts is vital to combatting digital divides.

Discussion

For technical communication practitioners and scholars interested in examining user experiences in an applied setting, this study provides new UX insights from the field of how underserved, novice ICT users interacted with technologies away from a traditional usability lab. The nontraditional field site and the ethnographic data collection methods for my research contributed to the types of user experiences I was able to learn about. Such experiences would not be available if this type of research was conducted in a lab or in a business setting. By spending time observing practices and interactions at Urban CTC, I was able to access the everyday occurrences and learn from underrepresented users who visit the CTC to conduct their own work or attend computer classes. In addition, I became familiar with the multifaceted roles tutors play and how they serve as both empathic resources who see patrons managing real life stresses resulting from limited ICT access and as valuable assets who help learners advance their digital literacies in profound and patient ways. The findings from this study illuminate the importance of well-informed tutorial materials that integrate experiences and perspectives of inexperienced users, the digital literacy acquisition challenges facing users, and how

Implications for Tech Comm User Advocates

technical communicators and UX designers can benefit from user localization approaches.

One of the unique features of this study is that it highlights underrepresented users and their experiences in a local context. Lack of representation in usability and UX scholarship may stem from a user's limited digital literacies, which makes this research especially valuable because it shares insight on users who are working to build their functional literacies so that they may eventually develop more critical literacies (Selber, 2004). For example, based on observations of Urban CTC computer classes, learners may have a hard time completing predetermined tasks for a usability test (Unger & Chandler, 2009) prepared by UX designers. Additionally, users were often pressed for time and may not have been able to participate in a study that required participation from users throughout several stages of design. The users at the CTC also contrast users in a lab setting because they are not working in isolation or periodically providing reflections to designers while completing their tasks. Rather, for the most part, Urban CTC users in a computer class had a social experience, interacting in a network of fellow learners and receiving ongoing feedback from tutors, which allowed them to seek clarification in real time. The nontraditional user setting of the CTC allowed me to learn from users who are underrepresented in the literature and who provide important insight into inexperienced ICT user experiences that are inaccessible in a lab setting.

The practices and interactions at the CTC revealed that, despite users having access to ICTs and instructional materials, there were still particular types of knowledge users needed to acquire before being able to operate ICTs. When users have little experience moving a mouse arrow across a screen and stopping it perfectly on an icon or have yet to independently formulate their own search terms and type them into Google, online computer tutorials meant to meet these users where they are at are insufficient. There is a perception that because there are resources available to help learners with computer basics, those who would seek these out could actually use them. My observations tell a different story. Novice ICT users who are still working to develop functional literacies (Selber, 2004) are unable to take advantage of these resources because: 1) they often lack the physical experience interacting with the hardware of technology (e.g., resting palm

and fingers on mouse, isolating the correct finger to click the intended button the correct amount of times), and 2) they usually do not arrive at computers with the cultural systems of meaning associated with ICTs. These findings align with McKee and Blair's (2007) assertion that "While some older adults' lack of access is certainly related to economic issues, much of it relates to not having the technological literacies needed for using a computer, accessing the Internet, and navigating the Web" (pp. 14–15). The findings from my research indicate that even when physical computers with an Internet connection are available for use, inexperienced users cannot use them due to usability obstacles resulting from a dearth of experience manipulating hardware and software or limited cultural knowledge associated with ICTs.

Even as ICTs become more common, keeping up with cultural knowledge becomes more complex as these technologies continue to advance. In writing about Web page design, Stolley (2011) describes some of the conventions for using color and techniques of design to cue users to where they are located within a particular website (e.g., constructing tabs and assigning them particular colors when users are there). However, these design strategies fail when inexperienced users may not yet recognize tabs as a navigational scheme or that color variations are to symbolize locations in a particular place. Until a novice user has had the time to build up the cultural knowledge associated with modern Web design, these visual cues are not as obvious as designers may think they are. Navigating Web 2.0 webpages of today is not like navigating Web 1.0 pages of the 1990s. Web links are rarely identifiable as underlined blue text anymore, advertisements disguised as non-ads are the norm, and the interactivity between sites and users is exploding. Simply put, modern websites are more complex and dynamic, making detection of subtle visual cues challenging.

The learners at Urban CTC continue to work to develop their digital literacies in spite of these challenges, and they are not alone in their desire and fight to understand the cultural ecologies of ICTs in order to become confident, capable users. Roxanne, one of the CTC computer course participants I interviewed, stated that "I wanna get there so I can be able to stand up on my own feet knowin' that I can do this." Struggles for developing literacies are not new, and as we have observed over time, literacies

often intersect with varying dimensions of power. For example, there is long history of literacy suppression in the US, and Black women have fought especially hard against racist, economic, and sexist barriers (Royster, 1990). Selfe and Hawisher (2014) explain that factors impacting digital literacy development range from income level and education to types of ICT access, one's English proficiency, and the presence of people who can help. For learners at Urban CTC, these barriers linger as they work together with tutors to surmount the particular obstacles in the way of their digital literacy development. Their efforts are reminiscent of literary societies initiated by Black men and women in the 1800s to share in a community with others who were interested in advancing their literacies (McHenry & Heath, 2001; Royster, 1990). Similar communities have also been noted more recently, such as the contemporary women's club where members supported one another by sharing "literacies, talents, and information" (p. 153) described by Moss and Lyons-Robinson (2014). Given the continued barriers encountered by Black women in developing their digital literacies, it should be no surprise that Urban CTC continues to serve as an important community resource for combatting digital divides.

Some of the obstacles these users face in acquiring digital literacies are woven into the material features of ICTs. In her research on four adults learning to read and write, Rosenberg (2015) writes that these learners chose to "pursue literacy despite material conditions that have repeatedly reminded them that literacy is not for them" (p. 2). In a similar fashion, material conditions at Urban CTC continue to suggest to inexperienced users that digital literacies are meant for others. As Selfe and Selfe (1994) have pointed out, computer interfaces reflect particular cultural contexts such as U.S. American professional offices, which can be confusing or alienating to those unfamiliar with that setting. Selfe and Selfe (1994) state, "Computer interfaces . . . are *also* sites within which the ideological and material legacies of racism, sexism, and colonialism are continuously written and re-written" (p. 484, emphasis in original). The findings in this study speak to how older eyes may not see the screen as easily and less trained hands find it more challenging to operate the mouse. Fortunately, CTC tutors help to mitigate these obstacles by offering feedback, helping learners recognize visual cues, and assisting with hardware.

One way technical communication practitioners and scholars can more critically engage with user experiences and the multitude of factors that influence their technology use is to pursue a user localization approach. Doing so, Sun (2006) argues, means we can uncover local ways of using technologies and develop more complex and nuanced understandings of how others interpret and use technologies instead of glossing over messy and complex features of local contexts when applying cultural dimensions. The tutors at Urban CTC set a good example for identifying and then modifying practices based on user feedback. Such user feedback led to visual and audible representations and strategies for illuminating difficult-to-recognize visual cues. Unlike other approaches to localization where profits are priorities (Taylor, 1992), user localization has the potential to serve as a dimension of UX work that is not preoccupied with financial gain but with user representation to create a more inclusive user experience.

Implications for Technical Communication User Advocates

The type of usability obstacles Urban CTC learners face shed light on the particular dimensions of digital divides at Urban CTC. These are details from the front lines that are not always revealed in reported statistics. Digital disparities are so often conveyed quantitatively, pointing to divisions in ICT use commonly based on income, race, or gender. User localization research can help to create a more complete picture of the people and experiences behind the statistics. While statistics are important for identifying the pervasiveness of digital inequalities, context provided through user localization approaches to UX design helps us better understand why they persist.

This study offers UX and technical communication user advocates a look into local cultural practices at an Urban CTC instead of a common usability setting. Based on learner and tutor interactions in this context, it is clear that inexperienced users need additional contextual information about using ICTs as well as physical practice interacting with ICT hardware. To help learners with navigating the hardware and visual nuances of ICTs, which are often not intuitive, tutors can provide visual and audible representations and serve as visual cue experts to raise learners' awareness to subtle nuances across interfaces. Without such

Implications for Tech Comm User Advocates

knowledge, inexperienced users may be unable to use ICTs, making job applications, Google searches, tax documents, civic engagement, email, and even virtual medical care inaccessible, even if the hardware and Internet connection are accessible. In order to cultivate culturally sensitive methods, scholars and practitioners should seek settings and users with less privileged ICT access and take a user localization approach to develop more empathic, empowering, and culturally meaningful methods of communication.

One of the limitations to this project is that of the sample, which is somewhat limited in size and is not representative of all inexperienced ICT users. While this research provides unique insight into a particular setting, more situated research like this is needed to account for the various experiences of other users working to develop their digital literacies. Examining other public sites like Urban CTC as well as private sites that do similar work would provide useful opportunities to compare user experiences. Additionally, the current research could be extended by engaging rural users who may lack reliable high-speed Internet or who would be more distant from ICT training courses. Another fruitful avenue of research might involve learning from users who access the Internet from different devices. Learning more about how these users navigate the Internet and carry out professional and technical communication work would provide useful insight into how instructional tutorials can be better tailored to bridge digital divides.

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Designing for a Culturally Inclusive Democracy: A Case Study of Voter Registration Outreach Postcards in Latino Communities

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Abstract

Purpose: This article examines a field study I co-authored urging Washington State residents to register online as voters (Mann & Pryor, 2014).

Method: Using leading design principles, I created postcards for the Office of the Washington Secretary of State that were mailed to unregistered residents. In addition to measuring the overall effectiveness of the postcards, the study evaluated the differences between two rhetorical messages. Both postcards described the same registration process, but one focused on the user-friendly aspects of the online application while the other emphasized that registering to vote is a social norm.

Results: Residents in three counties with large Latino populations were mailed bilingual English-Spanish postcards. The total treatment effect was significantly higher among recipients in these counties than the rest of the state but with no noticeable difference between two rhetorical messages. Statewide, the overall results show that the postcard describing the voter registration experience as “fast and easy” was significantly more effective than persuading recipients to register using social pressure. Emphasizing convenience was especially effective among 18-year-olds.

Conclusion: The study suggests that election administrators can create a more culturally inclusive voter registration process by designing bilingual outreach materials. This article offers several lessons learned for voter outreach design and discusses potential avenues for the continued study of culturally inclusive UX practices as applied to voter registration outreach.

Keywords: rhetoric, voters, Latino, communication, design

Practitioner's Takeaway:

- Bilingual design significantly increased voter registration in heavily Latino counties among people with Spanish surnames.
- Among recipients in heavily Latino counties, there was no significant difference between the two rhetorical methods tested. One treatment emphasized the convenience of the online voter registration process, and the other used social norming to encourage registration. Statewide, the majority of recipients were more likely to register when the postcard they received described the process as “fast and easy.” However, recipients of the two treatments in heavily Latino counties registered at nearly the same rate.
- Additional study of how bilingual outreach efforts affect users' experiences with online voter registration could provide further insight to practitioners of both communication design and election administration.

Designing for a Culturally Inclusive Democracy

As a professional communication designer and certified Washington State election administrator, I've spent nearly a decade creating online and print tools that help voters cast an informed ballot. I designed several editions of the Washington State voters' pamphlet, Washington's official voter registration form, ballot instructions for Vote By Mail (a West Coast phenomenon that's quickly spreading throughout the United States), and countless Get-Out-The-Vote marketing pieces.

For years, I tinkered with different rhetorical techniques, using methods that seemed most appropriate for the audience and medium. User-testing and focus groups provided some guidance, but I knew they weren't a comprehensive picture of Washington's diverse population, now numbering over 7 million people. So when the Office of the Secretary of State asked me to design postcards encouraging eligible Washington residents to register to vote prior to the 2013 General Election, I requested we use the postcards to study our rhetorical techniques.

This article discusses the field study I co-authored with Dr. Christopher B. Mann examining the effectiveness of social versus instrumental rhetorical methods of encouraging Washington State residents to register to vote (Mann & Pryor, 2014). This study provided new and valuable insights for election administrators to understand how the design of their voter outreach materials can impact citizens' participation in our democracy. The primary goal of this study was to guide future communication design in order to increase voter registration rates. Additionally, I felt I could contribute to the limited body of interdisciplinary research connecting communication design with voter outreach, especially in heavily Latino communities.

Communication designers have drastically improved the means by which Americans vote since the infamous "butterfly ballots" drew intense public scrutiny in the 2000 presidential election (Lausen, 2007). Thanks to efforts like AIGA's "Design 4 Democracy" initiative, today there are well-documented recommendations for ballot design, poll site signage, and voters' pamphlets (Chisnell, 2013). But casting a ballot is the final step in the voting process; the first step is registration. In most states, citizens cannot vote without first registering.

Eligibility criteria and deadlines for voter registration vary state by state. For example, North Dakota citizens may register and vote on Election Day, whereas Washington State voters must register at least 29 days before an election. And some states have imposed photo ID requirements for registration, while in Washington State there is none. However, in Washington State, a driver license is still needed to register online in order to capture the voter's electronic signature. These inconsistent regulations surrounding voter registration can be confusing and intimidating, especially for citizens with limited English proficiency. With more states moving toward online voter registration every year, bilingual voter registration outreach is an area ripe for collaboration between technical writers and UX professionals.

Although the pioneering work done by Lausen, Chisnell, Quesenberry and others in this emerging interdisciplinary field have been enormously helpful to voters attempting to cast a ballot, very little communication design research has been dedicated to the first step in the voting process: how and why citizens register to vote.

Theoretical Background

Social science literature frequently discusses what motivates voters, but people are too complex to credit a single variable. Fundamentally, scholars agree there are two general factors that influence voter participation. Wolfinger and Rosenstone's classic discussion of *Who Votes* (1980) and Campbell's *The American Voter* (1960) focus largely on social status indicators such as economic prosperity, educational attainment, and age. The statistical correlation between these demographic measurements and voting has been widely documented (Harder & Krosnick, 2008; Gonzalez & Tyler, 2008). For example, Watts (1999) speculates that older people habitually vote because they are more socially and financially invested in their communities. However, scholars such as Rusk (1974) and Timpone (1998) contend that the registration process itself may also impact voter participation. Timpone asserts that in the United States, the complicated two-step process of registering to vote and casting a ballot is inconvenient and may dissuade people from participating. Similarly, in a field study discussing voter registration methods, David Motz (2009) used mail pieces I designed for the Secretary of Washington State to demonstrate that more

Designing for a Culturally Inclusive Democracy

potential voters will participate given an easier, less time-consuming method of registration.

Although there's not much communication design literature related to voter registration, broader research points to two rhetorical techniques used to motivate readers to achieve a document's objective. According to Lentz and Pander Maat (2004), all documents—postcards, registration forms, cereal boxes, etc.—have a communicative purpose beyond presenting “just the facts.” In an interview ten years after her seminal work on document design, Schriver stated her belief that communication design synthesizes raw information into a message with a specific purpose for a specific audience (Carliner, 2007). Kain (2005) asserts that all documents function instrumentally to convey information and also function socio-politically to persuade the reader in ways that further the goals of the author. Just like political scientists recognize both social and process-related motives for voting, communication designers generally agree that documents also motivate readers through social and instrumental rhetoric (Hassett, 1996; Schriver, 1997). Good communication design uses socially persuasive techniques and aids comprehension to encourage or discourage a task, behavior, or opinion (Lentz & Pander Maat, 2004; Williams, 2007).

Both social status and the ease of the registration process play a role in voter participation, just like documents that function socio-politically and instrumentally to motivate readers. However, I have found only a handful of studies about non-partisan communication design techniques that can increase voter registration.

One of the few communication design studies discussing voter registration is a report written by Mann and Bryant (2012) for the Office of the Delaware Secretary of State comparing registration rates in response to four postcard treatments. Their study showed that postcard recipients were more likely to register when presented with an archetypal monochromatic “government notice” themed treatment, as opposed to full-color postcards featuring a patriotic call to civic duty. While the registration effect between these thematic treatments was statistically significant, it was unclear whether it was the visual imagery or the textual rhetoric that made the difference.

And as was previously mentioned, Motz (2009) demonstrated that more potential voters will participate given a less time-consuming method of registration.

Using direct-mail pieces I designed, Motz found that, compared to a control group that received no treatment, sending unregistered 18-year-olds a postcard listing the online voter registration website garnered an 11 percent increase, and that sending a pre-filled voter registration form resulted in a 15 percent increase.

My project designing the 2013 Washington postcards and studying their effectiveness was a continuation of Mann's research. However, the postcard treatments I designed were visually identical and varied only textually so that I could specifically test the effectiveness of social versus instrumental rhetoric. And unlike Motz's study that tested two different registration methods, participants in this study were given identical means of registration; the only difference between the treatments was the perceived personal cost of registration (time and effort), not the actual cost itself.

The intent of the project was two-fold: first, to inspire eligible citizens to become registered voters, and second, to further cross-disciplinary knowledge of communication design and election administration.

Applying Design Theory to the Postcard Treatments

The postcards were meant to increase the number of registered voters in Washington State but also needed to convey practical information about the registration process, such as where to find the online registration website, the approaching deadline, and eligibility criteria. Additionally, some of the postcards had to provide Spanish translations.

A highly diverse electorate is a reality of modern America. Translated voter registration materials are required by Section 203 of the federal Voting Rights Act in jurisdictions whose residents meet specific low-English literacy thresholds. The U.S. Department of Justice publishes a list of jurisdictions covered by Section 203 and monitors for compliance. Providing well-designed translations can be a challenge for technical writers and UX professionals given the many legal and technical constraints of online voter registration systems. In Washington State, three heavily Latino counties—Adams, Franklin, and Yakima—must translate all print and online voting materials in Spanish. These counties fulfill their Section 203 requirements by providing fully bilingual English-Spanish voting materials, so I created a second set of postcards with the same rhetorical messages

that met the bilingual requirements. Although this was not the only demographic subgroup we intended to measure within the field study, our hope was to compare the treatment effects of the bilingual postcards within these counties against the effects of the English postcards in other counties.

I designed two postcards with different rhetorical messages: the [Community] treatment that emphasized social rhetoric by increasing pressure to vote, and the [Online] treatment that emphasized instrumental rhetoric by highlighting the convenience of the online registration process. Table 1 summarizes the design theory applied to the 2013 Washington postcard treatments.

Visually, the postcard treatments were nearly identical. Likewise, the informational text on the back of both postcard treatments was also identical. Both postcards notified recipients that: “Our records show you are not registered to vote. To vote in the next election, you must register by the deadline. Online registration is quick and easy at www.myvote.wa.gov, or call (800) 448-4881 to request a paper registration form. You’re

eligible if you are at least 18 years old, a U.S. citizen, and not under Department of Corrections supervision for a Washington felony conviction.” (See Figure 1.)



Figure 1. Back of the English [Community] & [Online] treatments (identical). Notice the metacommunicative goal to align the postcards with an official government notice is echoed here with the Secretary of State’s logo and the U.S. Postal Service’s “Official Election Mail” indicia.

Table 1. Design theory and rhetorical methods applied to the [Community] and [Online] treatments

Design theory applied to both treatments	Instrumental rhetoric emphasized in [online] treatment	Persuasive rhetoric emphasized in [community] treatment
<p>Visually:</p> <ul style="list-style-type: none"> Alignment with the archetypal government notice using limited color scheme and state seal Typographical hierarchy places equal value on test statements in both treatments Test statement keywords in identical locations <p>Persuasive Rhetoric:</p> <ul style="list-style-type: none"> Surveillance language: “<i>Our records show you are not registered.</i>” Urgency: “<i>Deadline approaching</i>” Gratitude: “<i>Thank you! Your vote makes a difference.</i>” <p>Instrumental Rhetoric:</p> <ul style="list-style-type: none"> Provides a website to register online Provides a phone number to request a paper form 	<p>Clearly states task: “<i>Register to vote</i>”</p> <p>Summarizes steps for completion of task: “<i>3 minutes. Click. Done.</i>”</p> <p>Highlights speed and ease of task, reducing the perceived personal “cost” of registering to vote.</p> <p>Indicates mechanism for completing task: “<i>online</i>” and “<i>click</i>”</p> <p>Key descriptors by pre-test reviewers were “online” and “easy”</p>	<p>Describes social norms to implicitly encourage similar behavior: “<i>76% of people register to vote</i>”</p> <p>Offers method for improving social status: “<i>join the community</i>”</p> <p>Uses intentionally vague descriptor of the recipient’s social group: “<i>people like you</i>”</p> <p>Key descriptors by pre-test reviewers were “invitation” and “bandwagon”</p>

Designing for a Culturally Inclusive Democracy

The variations to the two treatments were in the text on the front of each postcard:

The [online] treatment stated:

“3 minutes. Click. Done. Register to vote online.”

The [community] treatment stated:

“76% of people like you register to vote. Join the voting community.”

To a certain extent, both postcard treatments functioned persuasively to convince recipients that they should register to vote. For example:

- Urgency was identified as a motivational factor in Mann’s study of voter registration outreach with the Office of the Delaware Commissioner of Elections (2012). Therefore, the warning “deadline approaching” was featured in a bright red call-out banner across the front of both Washington treatments.
- The letter on the back of both postcards starts with, “Our records show you are not registered to vote.” Surveillance language like this proved extremely persuasive in a similar voter registration postcard campaign studied by Gerber and Green (2012), who demonstrated that recipients feel greater social pressure to modify their behavior when they know they are being watched or that their actions will be publically known.
- A study by Panagopoulos (2011; see also Mann, 2012) indicated that voters respond to simple gratitude for performing their public duty. Therefore, both treatments close with “Thank you! Your vote makes a difference.”
- Additionally, Mann (2012) indicated his belief that recipients of the 2012 Delaware postcards may have mistaken treatments featuring colorful patriotic imagery with political advertising or commercial marketing. Mann indicated that patriotic imagery reminding recipients of their civic duty wasn’t as effective as archetypal “government notice” imagery emphasizing the urgency of an approaching deadline. While the registration effect between these thematic treatments was statistically significant, it was unclear whether it was the visual imagery or the textual rhetoric that made the difference. Therefore, the 2013 Washington postcards are visually identical, thus removing imagery as a variable and focusing on the impact of textual rhetoric. Based on

this, a primary design goal for the 2013 Washington postcards was to align both treatments visually with archetypal government notices that should be less likely to be mistaken for “junk mail.” To achieve this, both treatments used a limited color scheme and relied heavily on textual rhetoric rather than high-production imagery.

To function instrumentally, both postcard treatments instructed recipients as to how they could register to vote:

- A website for online voter registration was provided on both the front and the back.
- A toll-free phone number was also provided for recipients without Internet access to request a paper registration form via mail.
- Voter eligibility requirements were given on the back of both treatments.

The [online] treatment emphasized instrumental rhetoric, clearly stating the task asked of recipients: “Register to vote online.” (See Figure 2.) Johnson (2010) noted that instrumentally functional documents give readers multiple pathways to successfully complete their objective. Therefore, the front of the [online] treatment gave a succinct summation of the registration process for cursory readers (“3 minutes. Click. Done.”) while the back of the postcard provided more detailed instructions for more thorough readers. Although the [community] treatment provided exactly the same registration method, the [online] treatment highlighted the ease and speed by which recipients could register to vote online, thereby reducing their perceived cost of time and effort.



Figure 2. Front of the English [Online] treatment emphasizing instrumental rhetoric by lowering the reader’s perceived personal “cost” (in this case, time and effort) required to register

Pre-test reviewers were a convenience sample of staff in the Office of the Washington Secretary of State not directly involved in the project. They were asked to characterize their impressions of the mailings. When asked to describe the difference between the two treatments, pre-test reviewers confirmed the [online] treatment emphasized the process of registering to vote. Key descriptors were “online” and “easy.”

The [community] treatment emphasized persuasive rhetoric, telling recipients that “76% of people like you register to vote” and urging them to “join the voting community.” (See Figure 3.) When asked to describe the difference between the two treatments, pre-test reviewers confirmed the [community] treatment emphasized being a part of the group and used key descriptors such as “invitation” and “bandwagon” to summarize their reactions to the design.



Figure 3. Front of the English [Community] treatment using social norms as persuasive rhetoric; the majority of people are registered to vote, implying that to retain social status, the reader should also register.

According to Williams (2010), appeals to social membership are rhetorically persuasive. Therefore, the [community] treatment described social norms and informed recipients that the majority of citizens do participate in the voting process. Hopefully, this influenced recipients' perception as to what is expected behavior for group members. Although it might have been more succinct to say “76% of people register to vote,” the addition of “76% of people like you register to vote” was meant to reinforce the recipient's social status within the group they most closely associate themselves (Mann & Sinclair, 2014). Likewise, the call to “join the voting community” was intended to appeal

to the recipient's assumed wish to be included within a socially desirable peer group.

Bilingual Spanish-English postcards were mailed to participants in Adams, Franklin, and Yakima counties. (See Figures 4–6.) Although there may be some inherent bias in using a lighter, smaller font, this was standard practice for election administrators in



Figure 4. Back of the Spanish-English bilingual [Community] & [Online] treatments (identical).

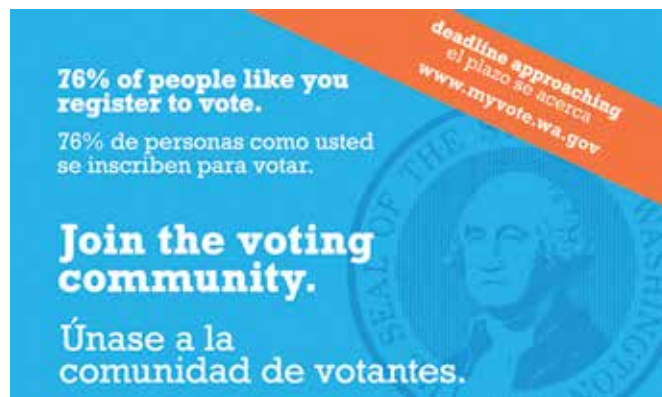


Figure 5. Front of the Spanish-English bilingual [Community] treatment



Figure 6. Front of the Spanish-English bilingual [Online] treatment

Designing for a Culturally Inclusive Democracy

those counties and the Secretary of State. The decision was made to use the existing style guide for bilingual publications so that an accurate assessment could be made regarding their effectiveness.

Field Study Methodology

The postcard project culminated with a field study funded by The Pew Charitable Trusts that evaluated the registration and turnout differences between the two rhetorical treatments.

The field study included 187,897 non-registered Washington State residents who were randomly assigned to two treatment groups and a control group that received no postcard. Participants living in Adams, Franklin, and Yakima counties were assigned to sub-groups of the treatment and control groups to accommodate the federally mandated Section 203 translation requirements. (See Figure 7.) Bilingual Spanish-English postcards were mailed to 10,860 participants in these counties, which represented 6% of the total number of participants who received postcards.

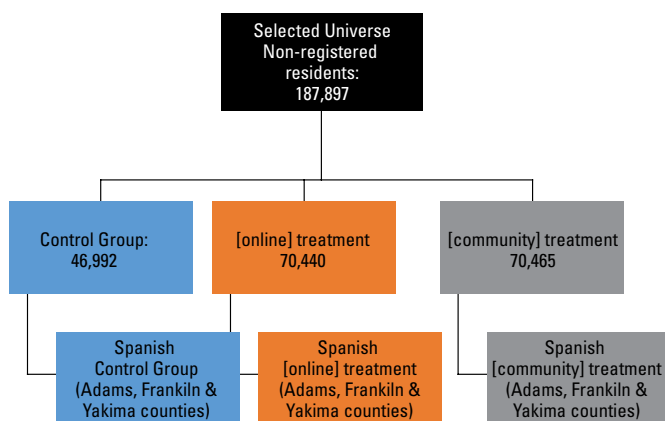


Figure 7. Diagram of random assignment to treatment and control groups. 10,860 Spanish-English bilingual postcards were sent to recipients in Adams, Franklin, and Yakima counties.

The postcards were sent prior to the 2013 General Election. Washington is part of a consortium of states that together manage the Electronic Registration Information Center (ERIC) to share voter registration and driver licensing data in order to maintain up-to-date voter rolls. ERIC generated a list of postcard recipients who were, prior to the voter registration deadline:

- A resident of Washington State

- At least 18 years of age by November 5, 2013 (the day of the General Election)
- A Washington driver license or state ID holder
- Not registered to vote at the address on file with the Department of Licensing

Each mailing was addressed by name. Although there is no research directly related to voter registration mailings, research on response to surveys, non-profit fundraising, and commercial mailings consistently finds that response rates are stronger for mailings addressed to individuals rather than “Postal Customer” or “Resident” (e.g. Dillman, Smyth, & Christian, 2008).

Results Show “Convenience” Rhetoric Is More Effective, Except in Latino Communities

The results of the field study show that overall, the [Online] treatment describing the registration process as “fast and easy” was more effective than attempting to persuade recipients to register using social pressure.¹ (See Figure 8.) This suggests that potential voters were more motivated to participate given a registration process they perceived to be easier and less time consuming than when they were influenced by a sense of social responsibility or pride in their communities.

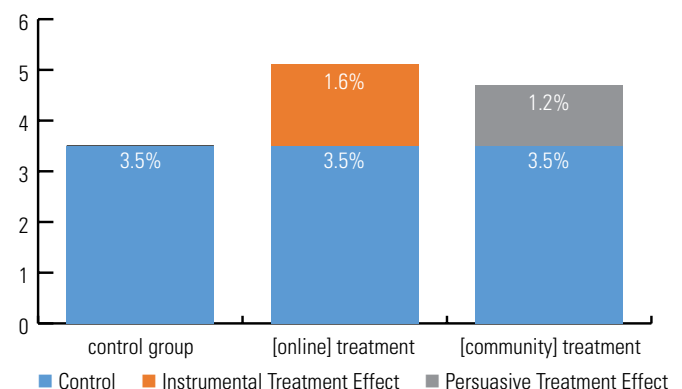


Figure 8. Voter registration rates for all participants. Portraying the online voter registration process as “fast and easy” was clearly more effective than using social norming to persuade people to register as voters.

¹ The difference between these treatments is statistically significant, $p=0.001$, two-tailed.

Unlike recipients who received English-only postcards, however, there was not a significant difference between the two rhetorical treatments among recipients in heavily Latino communities who were sent bilingual postcards. (See Figure 9.)

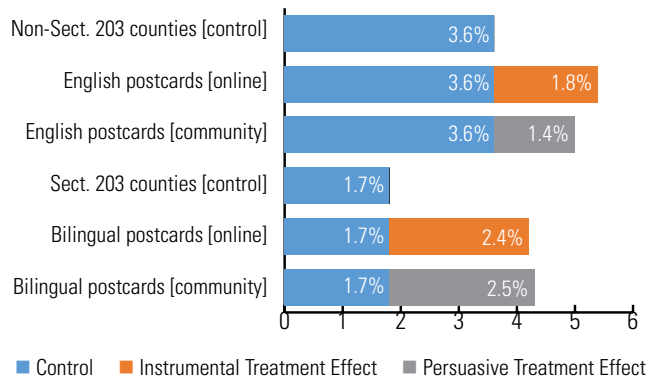


Figure 9. Compared to participants who received English-only postcards, there was not a significant difference between registration treatment effects on sub-groups receiving bilingual Spanish-English postcards.

Digging deeper, we compared participants' names to a list of Spanish surnames provided by the U.S. Department of Justice. Washington State law does not permit asking for ethnicity in the voter registration process, so this was our next-best option. Participants with Spanish surnames were assumed more likely speak Spanish, although some people speak both English and Spanish and some speak only English. To create a bigger sample, we pooled the data between the two treatments to analyze the effect of bilingual mailings between those with and without Spanish surnames.

Compared to the control group that received no postcard, the bilingual treatments significantly increased voter registration among individuals with Spanish surnames (1.0 percentage points)² and individuals without Spanish surnames (0.9 percentage points)³ although the treatment effect between the two sub-groups were nearly equal. (See Figure 10).⁴

² The increase in registration for the pooled treatment groups among individuals with Spanish surnames is statistically significant, $p=0.028$, one-tailed.

³ The increase in registration for the pooled treatment groups among individuals without Spanish surnames is statistically significant, $p=0.004$, one-tailed.

⁴ The estimated effects are statistically indistinguishable, $p=0.944$, two-tailed.

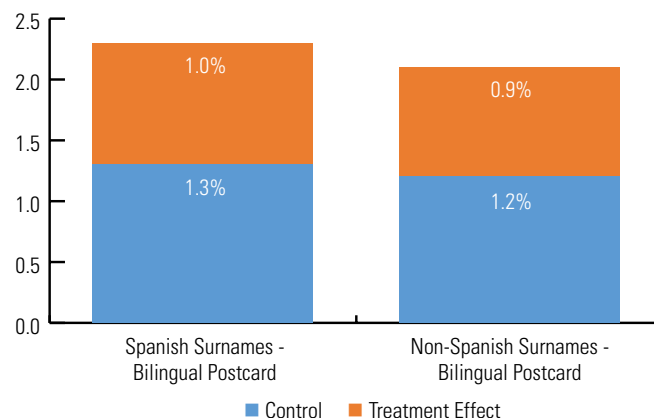


Figure 10. Treatment effects for bilingual postcards were indistinguishable for individuals with Spanish surnames compared to those with non-Spanish surnames

However, there was a statistically significant difference between recipients who received the English-only postcard. (See Figure 11). As data show, recipients with non-Spanish surnames were seven times more likely to register given the English-only postcard than recipients with Spanish surnames:⁵ the treatment effect of the English-only postcards was 1.4 percentage points among individuals without Spanish surnames⁶ and only 0.2 percentage points among individuals with Spanish surnames.⁷

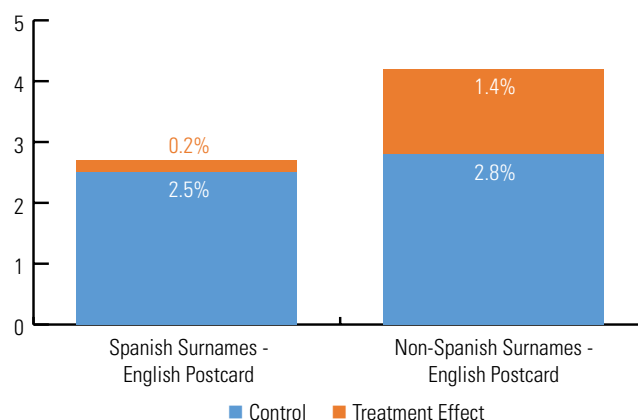


Figure 11. Treatment effects of English-only postcards were significantly less for individuals with Spanish surnames compared to those with non-Spanish surnames

⁵ The estimated difference is statistically significant, $p=0.007$, two-tailed.

⁶ The increase in registration for the pooled treatment groups among individuals with non-Spanish surnames is statistically significant, $p<0.001$, one-tailed.

⁷ The increase in registration for the pooled treatment groups among individuals with Spanish surnames is not statistically significant, $p=0.248$, one-tailed.

Designing for a Culturally Inclusive Democracy

Looking at the same data set from a different perspective, we can see that participants with non-Spanish surnames who received the English-only postcard registered at a 50 percent higher rate than when they are given the bilingual postcard. (See Figure 12). And postcard recipients with Spanish surnames who received bilingual English-Spanish versions of the postcards were five times more likely to register than those who received English-only postcards (See Figure 13). Table 2 summarizes the registration data.

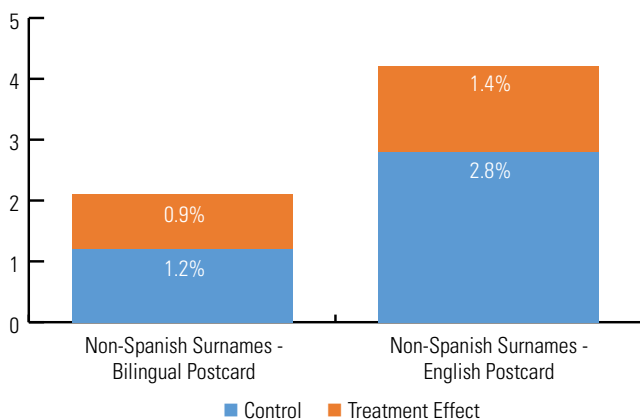


Figure 12. Treatment effects were greater for individuals with non-Spanish surnames who received English-only postcards compared to those who received bilingual postcards

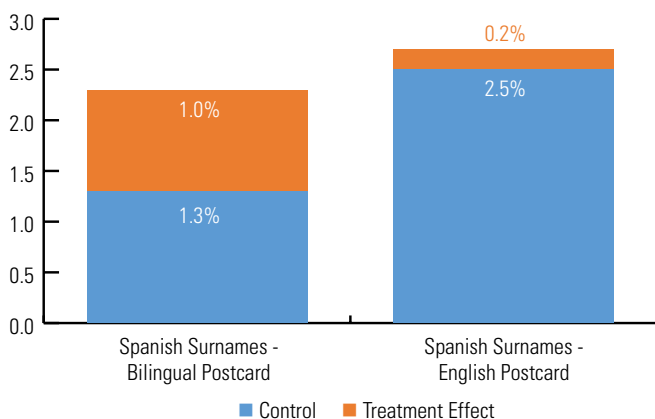


Figure 13. Treatment effects were diminished for individuals with Spanish surnames who received English-only postcards compared to those who received bilingual postcards

Again, I'll reiterate that this approach of counting people with Latino surnames as Spanish-speakers has its flaws. People with Latino surnames do not necessarily speak Spanish, just as there are Spanish-speakers whose names do not sound Latino. This reflects the diversity

of Hispanic populations. However, as a pilot study for designing more culturally inclusive voter registration materials, our method did provide some insights.

Lessons Learned: Guiding Future Voter Outreach Communication

This project used contemporary communication design theory to create postcards that were both easy to read and persuasive. Ultimately, the most significant lessons researchers and practitioners of voter outreach communication can take away from this field study are:

Among recipients with Spanish surnames, bilingual postcards encouraged higher registration rates compared to those who received English-only postcards.

Although instrumental rhetoric emphasizing the speed and ease of online voter registration was overall more effective, there was not a significant difference between the two rhetorical treatments in heavily Latino communities.

This study suggests that bilingual design can help create a more culturally inclusive voter registration process, but there is clearly more to learn.

This field study was a statistical survey of all eligible but unregistered Washington State residents that examined the effectiveness of different rhetorical treatments. Because we needed to pool the treatments to create a statistically significant sample size, we were unable to determine if Latino postcard recipients respond to social rhetoric at a higher rate than English-speaking recipients. This is difficult to accurately measure in Washington State, which does not permit the collection of ethnicity data when registering voters. For the purposes of this article, I excluded other subgroup data (age, gender, etc.) that was measured in the field study and focused on recipients of the bilingual English-Spanish postcards. However, this was not an in-depth case study of the effects of bilingual outreach materials on Latino voter registration. Additional study of bilingual voter outreach may reveal more specific findings.

As with all research conducted in the field, the results of this study may have been influenced by a number of factors, including the general low level of public interest in elections that is inherent in an odd-year, non-federal election (reflected by the low voter turnout statewide in 2013). The results of a similar

Table 2. Voter registration data

	Control Group Registration Rate (no postcard)	Instrumental (online) Treatment Effect	Persuasive (social) Treatment Effect	Total Recipients
Overall	3.5%	1.6	1.2	187,897
English postcard recipients	3.6%	1.8	1.4	112,087
Bilingual postcard recipients	1.7%	2.4	2.5	10,860
	Control Group Registration Rate(no postcard)	Combined Treatment Effect ("online" and "social")		Total Participants
Bilingual postcard recipients with Spanish surnames	1.3%	1.0		3,565
Bilingual postcard recipients with non-Spanish surnames	1.2%	0.9		7,295
English postcard recipients with Spanish surnames	2.5%	0.2*		12,080
English postcard recipients with non-Spanish surnames	2.8%	1.4		164,957

* The increase in registration for the pooled treatment groups of English-only postcards among individuals with Spanish surnames is not statistically significant, $p=0.248$, one-tailed. All other registration effects are statistically significant.

study conducted during a different election year or in a different state may vary.

Although this was not an in-depth study of bilingual communication, our findings point to the need for future study. According to the National Conference of State Legislatures, 38 states currently offer or are developing online voter registration. As this new technology develops and states shift away from paper-based voter registration, I strongly believe that areas of future study should focus on bilingual communication design that increases the success rate of limited-English speakers attempting to register online. It is crucial that technical writers and UX professionals collaborate with election administrators to ensure we are designing a culturally inclusive democracy.

Notes

My deepest thanks go to Dr. Chris Mann for his expert advice conducting field studies and his unbiased analysis of the results, and to the Pew Charitable Trusts for funding this study.

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Lindsay Pryor is a public communications specialist. She is passionate about connecting citizens and government through UX and information design. Lindsay created award-winning online and print voter outreach campaigns for the Secretary of Washington State and provided UX guidance for their online voter registration system. Currently, Lindsay is developing outreach materials that help small businesses compete for local government contracts. Lindsay previously taught rhetoric at Wenzhou University and was Assistant Director of International Studies at Saint Martin's University. She can be reached at lindsaypryor@gmail.com.

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Special Series Review On Engineering Communication

By Donald R. Riccomini

Introduction

The books reviewed here range from conventional instruction in technical communications for non-engineers to topics applicable to engineers, such as the need to understand and practice engineering within a broader organizational and intercultural context. As such, these texts, taken together, can serve as a comprehensive curriculum specifically targeted at engineers, both as students and as professionals.

Engineering Communication: A Practical Guide to Workplace Communications for Engineers



Engineering Communication: A Practical Guide to Workplace Communications for Engineers, by David Ingre and Robert Basil, is a comprehensive yet relatively compact introduction to the realities of communicating in engineering environments. The text emphasizes that

communication, especially with non-technical audiences, is inescapable for the engineer and takes an increasing number of forms, including not only conventional genres like proposals and reports but also business plans, digital and social media, and online search methods.

Through Cengage Learning's online program, MindTap, instructors can customize and integrate content "seamlessly" with learning management systems like Blackboard. Students can take notes online, access videos of case studies, and listen to conversations enabling them to "examine and analyze oral forms of communication"—something typically not addressed in conventional texts (p. xiii).

The authors reflect the engineering perspective in a simple formula that specifies Context, Message, Audience, Purpose, and Product (CMAPP) as the

criteria for achieving successful communication. This, in turn, can serve as the baseline for deriving situation-specific solutions, much as one can analyze the behavior of a particular electrical circuit from fundamental principles like Ohm's law and Maxwell's equations.

Thus, the communication process is described through Claude Shannon's theory of information transfer, where noise or interference is identified as the variable to be eliminated from the communication. The authors explain how unnecessary words, poor grammar, cartoonish clip art, excessive verbal or visual complexity, and the failure to consider audience, context, and culture undermine communicative efficiency—in engineering terms, how noise undermines signal.

The emphasis on Context and Audience reflects the fundamental principle that engineering communication, unlike classroom writing, is "*audience driven*," not "*author driven*" (p. 2, emphasis in original), and that failing to consider the audience profile is a major source of noise, along with failing to consider broader issues raised by intercultural communication, such as vocabulary, personal space, eye contact, and humor.

The text uses case studies from four sample organizations—a two-year technical college, a university with undergraduate and graduate engineering programs, and two companies founded by engineers—to model real-world communication problems. It also includes sections on persuasion, argumentation, syllogisms, and logical fallacies to provide engineers with fundamental reasoning skills useful when classroom knowledge falters and thinking critically from first principles is necessary.

Overall, Ingre and Basil have produced an excellent introduction to engineering communications. It combines fundamental, generic instruction in technical communication with an engineering-specific perspective and analytical approach that will appeal to the engineering student. This text is an excellent place to begin for an engineering communications curriculum.

Engineering Speaking By Design: Delivering Technical Presentations with Real Impact



For deeper, more detailed instruction in presentation skills for engineers, Edward J. Rothwell and Michael J. Cloud's *Engineering Speaking by Design: Delivering Technical Presentations with Real Impact* would be an outstanding choice. The authors explicitly inform students that presentations are unavoidable in

engineering and often pivotal in securing funding or support for a project—the best technical ideas don't necessarily get funded, but “those that are *presented* the best” do (p. 4, emphasis in original).

Rothwell and Cloud approach technical presentation as a problem in engineering design that can be specified and measured, and thus as a skill that can be learned and improved through practice, much like a musical performance. Concurrent presentation design is preferred because it emphasizes recursively “getting information and early feedback” (p. 16) and adjusting the presentation accordingly. In a successful presentation, as in “successful engineering design, *form must match intended function*” (p. 18), so the engineer “*must keep the backgrounds, needs, and purposes of the audience firmly in mind at all times*” (p. 17, emphasis in original).

Presenters should design the presentation to ensure it stays within the time limit, be ready to cope with balky equipment and, above all, practice. The presentation is structured as a two-part funnel, with the introduction leading to specific discussion in the body and then funneling back out through the conclusion. The presenter must state explicitly what real-world problem the technology solves before launching into a discussion of technical detail.

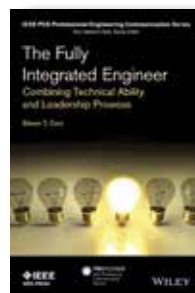
Especially appropriate to engineers is instruction on how to discern formal and informal logical fallacies; how to present calculations, not by reading them, but by substituting broader terms for mathematical notations described; how to test them for accuracy; and how to incorporate judgment into logic by using “Ockham's razor” (pp. 45–66, 67). Similar but briefer advice is given on syntax and diction, the authors referring the student to their companion volume,

Engineering Writing by Design: Creating Formal Documents of Lasting Value for a fuller treatment.

The remainder of the book covers slide design based on the principle that “Slides are *visual aids*,” and may even be unnecessary (p. 80), but if used, must be guided by “*readability and complexity*” (p. 90, emphasis in original). Presenters should avoid too many words or equations on slides (unless demanded by the audience) and should test their slides' readability from far corners of the room. Above all, engineers should practice their presentation before groups and integrate their feedback.

Engineering Speaking by Design offers excellent practical advice aimed specifically at the engineer and not readily available in conventional technical communication textbooks. It shows the engineer how to think about presentations “as an engineering problem, and solve it” through a design approach focused on meeting the specifications or requirements of the talk (p. 3). As such, the book practices what it preaches, ably adjusting its content and format to the engineer, its target audience.

The Fully Integrated Engineer: Combining Technical Ability and Leadership Prowess



Steven T. Cerri's *The Fully Integrated Engineer: Combining Technical Ability and Leadership Prowess* extends the engineer's understanding of audience and context more broadly into issues of career advancement and professional growth. Technology alone will not make engineers successful over the long term.

Instead, a “**phase shift**” in their thinking is required—particularly the ability and willingness “to embrace ambiguity and the lack of a precise, right answer to all questions and problems” (p. 2, emphasis in original).

This phase shift occurs by recognizing the behavioral sub-routines that influence our decisions and actions, and recontextualizing them within a new paradigm Cerri calls a Gem of Wisdom. He outlines a Cycle of Influence that begins with a Map of the World, a preconceived notion of how things are that Limits Our Beliefs by including some details but not others. This narrowed Focus of Attention triggers an Emotional and Physiological Charge, causing Actions and Behaviors that reinforce our original Map of the World.

Special Series Review On Engineering Communication

The Cycle of Influence affects engineers as much as anyone else, despite their penchant for trying to understand everything through data and logic. To become successful in their careers, engineers must re-program their Cycle of Influence by enlarging their Map of the World, because only that can change the Actions and Behaviors at the end of the cycle. Change the Map, change the Behavior (pp. 27–29).

With this as his model, Cerri describes fifteen Limiting Beliefs that restrict the engineer's career. The “goal is not to remove [the engineer's] limiting belief,” but to “add choices” (p. 41). Cerri's process shows the engineer how to rethink his or her Map of the World by adding new beliefs and noting the change in emotion or physiological response that accompanies them. As Cerri notes, this part of the process involves some heuristics and trial-and-error—it is not a precise recipe. Adding new beliefs will, over time, modify the actions and behaviors resulting from the previous Map of the World, while retaining the old belief, because it may actually be the “appropriate course of action” in some situations (p. 44).

Thus, engineers might have a Career-Limiting Belief that since their ideas are their identities, they must always fight for their ideas, because objections to them are essentially a “personal attack” (p. 45). Cerri shows how an engineer taking a broader view of the issue—which is not to be right but to solve the problem—invites others to participate in the problem solving process itself and lessens the sense of obligation the engineer has to be right all the time, unblocking the Limiting Belief and increasing the engineer's value to the organization.

Using case studies, Cerri shows how the process can undo many Career-Limiting Beliefs that beset the engineer, such as Pursuing Perfection or Withholding Expertise. An interesting “self-help” book that can help engineers overcome the restrictions of a purely technological focus in their careers.

Teaching and Training for Global Engineering: Perspectives on Culture and Professional Communication Practices



Kirk St. Amant and Madelyn Flammia's *Teaching and Training for Global Engineering: Perspectives on Culture and Professional Communication Practices* is a collection of scholarly articles addressing how the engineer can communicate effectively in a global environment characterized by

varying cultural expectations at the linguistic, societal, informational, and educational levels. Each article includes “foundational” information on the topic and “approaches to teaching these topics effectively” (p. xxx).

In general, engineers do not learn foreign languages, do not understand the socio-cultural influence of language, and are unaware of non-verbal cultural differences such as differing attitudes towards tight versus loose personal space, direct versus indirect speech, and holistic versus analytical reasoning. Even graphics, often considered universal in meaning, are influenced by cultural differences. German mechanics prefer highly detailed, bottom-up technical illustrations of transmission assembly, whereas Chinese mechanics, working on the same transmission, prefer less detailed, top-down drawings letting them fill in the details.

Similarly, social differences influence the willingness to equip desktops with open-source Linux (common in Europe and developing countries) rather than proprietary Microsoft (the American preference). Variations in brand preference reflect variations in localization strategies, leading to glocalization, a hybrid approach that integrates cultural differences more explicitly into the seemingly straightforward process of translation. A systematic value analysis method helps students discern the appropriate ethical parameters for intercultural communication through a flowchart designed to “resolve conflict in favor of the higher or more central value” within a set of competing values (p. 116).

Students can also learn and practice intercultural communication by working with students from other countries in virtual teams to design and publish technical documents and presentations. Particularly relevant to cross-cultural project communication is sensitivity to the centrality of experience and narrative in learning. Students learn “by doing and reflecting on doing” in “real-world, international situations,” like those experienced by practicing engineers (pp. 173, 176). Narratives are vital because they incorporate heuristics and ambiguity, requiring an interpretive approach that complements and culturally contextualizes the classical functionalist or quantitative method that assumes an underlying, universal truth untouched by cultural difference.

Teaching and Training for Global Engineering concludes with methods for “the assessment of intercultural learning outcomes,” assessment examples from Georgia Tech and Purdue, and a checklist for conducting an assessment. In all, the editors have compiled a useful selection of research articles enhanced by practical guidelines and techniques directly applicable to teaching.

Conclusion

Overall, the four books reviewed here offer the instructor the option of selecting one or more books to fit a particular curriculum or adopting all four as the basis for a comprehensive course that addresses not only the processes and tools of engineering communication but also the broader career, social, and cultural aspects of the profession. All engineering communications instructors can benefit from adopting and using any or all of these texts as befits their curriculum and pedagogy.

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Special Series Review On Engineering Communication

Table 1. Books on engineering communications

	<i>The Fully Integrated Engineer</i>	<i>Engineering Communications</i>	<i>Engineering Speaking by Design</i>	<i>Teaching and Training Global Engineering</i>
Audience	Engineering students and professionals	Engineering students	Engineering students	Engineering communications instructors, professionals, and managers
Major Strengths	<ul style="list-style-type: none"> • Real-world advice on career growth in engineering • Practical method for changing career-limiting beliefs • Realistic case studies • Chapters self-contained, usable 	<ul style="list-style-type: none"> • Complete but compact content • Includes instruction on social media, online documentation, open-source collaboration • Emphasizes context- and audience-driven communication • Available online, customizable by instructor • References to useful websites for each chapter 	<ul style="list-style-type: none"> • Presentations treated as engineering design problem • In-depth analysis of presentation skills and techniques • Rigorous, detailed, engineering-oriented instruction on logic and presentation of equations 	<ul style="list-style-type: none"> • Wide-ranging selection, with pedagogical orientation • Research generally thorough, balanced • Maintains consistent focus on intercultural issues directly relevant to engineering
Major Weaknesses	None, though “self-help” tone might put off some engineers	None, other than awkward physical size (8”x10”)	None. Only basic guidance on slide design.	None, except for occasionally wordy academic jargon
Comments	A practical approach for accelerating and expanding career growth, usable in classrooms or on the job, with online resources by the author available for further study and research.	A comprehensive introduction to technical communications with a definite engineering orientation. Provides underlying theoretical or research basis for guidance on communication model, and language.	Excellent handbook for improving the engineer’s speaking and presentation abilities, specifically written for engineers by engineers.	A very good source of research for instructors integrating intercultural communication awareness and techniques into the engineering communications curriculum.
Rating (5-star scale)	4.5	4.5	5	4.5
Cost (USD)	\$49.95	\$95.95	\$49.95	\$49.95

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Jackie Damrau, Editor

Books Reviewed in This Issue

- | | |
|--|---|
| <p>"Proof," Policy, & Practice: Understanding the Role of Evidence in Improving Education 173</p> <p>Paul E. Lingenfelter</p> <p>Science Blogging: The Essential Guide 173</p> <p>Christie Wilcox, Bethany Brookshire, and Jason G. Goldman, eds.</p> <p>Knowledge and Discourse Matters: Relocating Knowledge Management's Sphere of Interest onto Language 174</p> <p>Lesley Crane</p> <p>Quantifying the User Experience: Practical Statistics for User Research, 2nd ed. 175</p> <p>Jeff Sauro and James R. Lewis</p> <p>IT Project Management: A Geek's Guide to Leadership 176</p> <p>Byron A. Love</p> <p>The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips, 2nd ed. 177</p> <p>Judith V. Boettcher and Rita-Marie Conrad</p> <p>Assembling Arguments: Multimodal Rhetoric and Scientific Discourse 177</p> <p>Jonathan Buehl</p> <p>How To Be A Writer: Conversations with Writers about Writing 178</p> <p>David Quantick</p> <p>Facebook for Dummies 179</p> <p>Carolyn Abram</p> | <p>The Wiley Handbook of Learning Technology 180</p> <p>Nick Rushby and Daniel W. Surry, eds.</p> <p>System: The Shaping of Modern Knowledge 181</p> <p>Clifford Siskin</p> <p>Reason & Rigor: How Conceptual Frameworks Guide Research, 2nd ed. 181</p> <p>Sharon M. Ravitch and Matthew Riggan</p> <p>Odyssey—The Business of Consulting: How to Build, Grow, and Transform Your Consulting Business 182</p> <p>Imelda K. Butler and Dr. Shayne Tracy</p> <p>The Word Detective: Searching for the Meaning of It All at the Oxford English Dictionary: A Memoir 183</p> <p>John Simpson</p> <p>How the Brain Processes Multimodal Technical Instructions 184</p> <p>Dirk Remley</p> <p>The Book: A Cover-to-Cover Exploration of the Most Powerful Object of Our Time 185</p> <p>Keith Houston</p> <p>Organizations, Communication, and Health 185</p> <p>Tyler R. Harrison and Elizabeth A. Williams, eds.</p> <p>The Study of Language, 6th ed. 186</p> <p>George Yule</p> |
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"Proof," Policy, & Practice: Understanding the Role of Evidence in Improving Education

Paul E. Lingenfelter. 2016. Sterling, VA: Stylus Publishing. [ISBN 978-1-57922-751-7. 262 pages, including index. US\$29.95 (softcover).]



In education, policy makers and practitioners—educators at various levels from boards to classrooms—look to social scientists and researchers to tell them “what works.” While each of these professional specialties share the goal of improving educational outcomes, their working

relationship is uneasy, and the resulting educational initiatives and interventions rarely deliver the promised results, and often have unintended, and even undesirable consequences.

With *“Proof,” Policy, & Practice: Understanding the Role of Evidence in Improving Education*, Lingenfelter hopes to improve the situation by showing how evidence is used (and misused) in forming and applying educational policy, and by helping each of the professional specialties better understand each other’s needs, methods, capabilities, and concerns so, working together, they might become more successful.

The author draws on a lifetime of experience and a wide, deep familiarity with the relevant programs and literature to elucidate both the promise and limitations of what research can deliver. Lingenfelter covers all the necessary bases from a variety of perspectives, explaining such things as the kinds of evidence (qualitative, quantitative) that can be gathered, the purposes to which it can be applied (assessment for improvement, assessment for accountability), and how it gets used (and often misused) to design policy interventions. His deep understanding, clear-eyed analysis, and even-handed presentation of where things work and how things go wrong contributes much to the book’s value.

Lingenfelter examines the research environment and makes valuable suggestions for how researchers might better tailor their research to give policy makers and practitioners the relevant and applicable information they need.

He also shows that good research is not enough. When policy interventions get applied, problems arise.

Almost any intervention, including testing itself, can have unintended consequences such as the perverse incentives to game the system that grew out of the No Child Left Behind’s high-stakes testing. Beyond that, evidence and policy initiatives don’t function in a vacuum but in an environment of government and organizations, where individuals and institutions have unique perspectives and interests to protect. Lingenfelter identifies and provides an insightful, fair-minded discussion of the many economic, political, emotional, and tribal issues that come in to play.

Yet, while the issues are daunting, Lingenfelter delivers a hopeful book that argues that improvement is possible if pitfalls are avoided. He wraps it all up with a chapter of reflections, observations, and opinions on “What Works, When, and How” (p. 178), in which he keys his points back to relevant sections of the main text.

Whether you are professionally involved in educational reform, or are just interested in a better understanding of the issues, *“Proof,” Policy, & Practice* has much to offer.

Patrick Lufkin

Patrick Lufkin is an STC Associate Fellow with experience in computer documentation, newsletter production, and public relations. He reads widely in science, history, and current affairs, as well as on writing and editing. He chairs the Gordon Scholarship for technical communication and co-chairs the Northern California technical communication competition.

Science Blogging: The Essential Guide

Christie Wilcox, Bethany Brookshire, and Jason G. Goldman, eds. 2016. New Haven, CT: Yale University Press. [ISBN 978-0-300-19755-6. 270 pages, including index. US\$24.00 (softcover).]



Accurate, effective science communication is an important aspect of societies worldwide; however, how science is communicated to the public or used in making policy is extremely controversial. For those interested in the more altruistic aspects of science communication or who just want to

be a science writer, it might be worthwhile to explore science blogging. *Science Blogging: The Essential Guide* is

a comprehensive and informative book about online science communication that can benefit and be appreciated by both novice and experienced science writers. Each chapter is self-contained, so depending on interest, experience, and goals, readers can read the book straight through or choose whichever chapters most relate to what they want to learn or achieve.

To stand out in a field that is as established and widespread as science communication, online science writers have to find a niche and earn a reputation as trustworthy experts, of which this book has no shortage of ideas. Beginning with a chapter on whether blogging is right for you, *Science Blogging* has 26 short, easy-to-read chapters that help readers understand the unique aspects of this writing style. The organized chapters take readers on an exploratory journey from learning the logistics of setting up a blog and building a following to maintaining a distinctive presence through an interactive blog, joining an online science network, blogging about controversial topics, and promoting a blog through social media. Science is traditionally a male-dominated discipline, so the chapters devoted to the unique challenges that minority and women science writers face clear the way for new voices to permeate the field. Likewise, student, tenure-track faculty, and institutional bloggers face their own challenges and are addressed in independent chapters. And since a blog's success is measured by traffic and commentary, there are chapters on metrics, managing comments, and dealing with "Deniers, Cynics, and Trolls" (p. 224).

This book has many strengths, such as the comprehensive coverage, the experienced contributors that wrote their chapters in an engaging and informative style very similar to the advice they give, and the collective list of online resources throughout the book. Now that science writing classes are part of many professional and technical writing programs and journalism departments, *Science Blogging* is a must read for undergraduate and graduate classes in those programs. Science students often are limited on the number of writing classes they can fit into their program of study. It could be beneficial for these students to learn about and practice the craft of science blogging academically and professionally to strengthen their writing and communication skills. Similarly, practicing scientists and journalists could use this

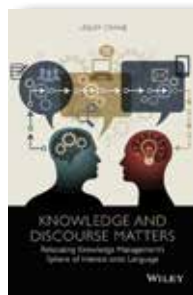
style of writing to make advancements in the overall communication of science to the public and their peers.

Diane Martinez

Diane Martinez is an assistant professor of professional and technical communication at Western Carolina University. She previously worked as a technical writer in engineering, an online writing instructor, and an online writing center specialist. She has been with STC since 2005.

Knowledge and Discourse Matters: Relocating Knowledge Management's Sphere of Interest onto Language

Lesley Crane. 2016. Hoboken, NJ: John Wiley & Sons, Inc. [ISBN 978-1-118-93185-1. 308 pages, including index. US\$110.00.]



We have heard of knowledge management (KM) for many years, even decades. Organizations hire knowledge managers; philosophers write about and discuss epistemology; biologists and neuroscientists examine the development of knowledge in the brain; psychologists look into the impact on persons and cultures; and so forth. Rarely do these groups try to define what knowledge is and how it occurs.

Crane divides *Knowledge and Discourse Matters: Relocating Knowledge Management's Sphere of Interest onto Language* into two parts: Part 1 reviews previous attempts to define knowledge and summarizes various theories of knowledge management, and Part 2 centers on research with an emphasis on the social construction of meaning. There are 17 chapters: 11 in Part 1 and 6 in Part 2.

Once Crane completes the review of definitions and theories that serve as background for her research project, she gets to the book's main point: examining the need for research into KM and how to go about doing it. The connection to the title comes when she describes what to use to do the research. The subtitle suggests her view that we need to recast the discussion away from previous views to one that links KM to language, specifically, discourse analysis. A major problem not completely resolved in both the literature

and Crane's book is what is knowledge. When do you have knowledge rather than data or information? Is knowledge something "out there" to be discovered and labeled? How does it differ from information or even wisdom. Subjective? Objective? These are some of the problems she discusses in Part 1.

Crane argues that because knowledge resides in both text and talk within an organization, the problem is knowing just what to manage and to what end. Then, in Part 2, she describes her research using discursive psychology to analyze knowledge sharing meetings in two organizations in central London. Crane's focus has been on particular elements of knowledge sharing: identity, trust, risk, and context. Based on an analysis of transcripts, she claims that the speakers are aware of these issues and that their discussion or knowledge sharing actions are influenced by the direction and scope of these actions.

The value of Crane's *Knowledge and Discourse Matters* for advanced undergraduate and graduate students who are studying knowledge and information management and are wanting to do research lies in the literature review and history of the term and her summarizing various KM theories. Practicing technical communicators could focus on Part 2 where she applies what she develops in Part 1 to specific situations. The first group should be familiar with scholarly writing, both content and style and have no trouble understanding, while the second will find it difficult to find and understand the information that they need. Members of the first group should use it as a class text, while members of the second should recommend it for the company library.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he served as guest professor at the University of Paderborn, Germany.

Quantifying the User Experience: Practical Statistics for User Research

Jeff Sauro and James R. Lewis. 2016. 2nd ed. Cambridge, MA: Morgan Kaufmann. [ISBN 978-0-12-802308-2. 350 pages, including index. \$54.95 (softcover).]



Quantifying the User Experience: Practical Statistics for User Research is the definitive book on inferential statistics for usability researchers. The authors present the equations, discussions, and examples for and in the context of usability studies, primarily usability testing.

Need to justify having only a small number of participants in a usability test? Sauro and Lewis explain confidence intervals and show how to compute them.

Need to figure out how many people to include in a study to reach a specific level of confidence in what you learn? Sauro and Lewis show how to do that.

Wondering about the research related to standardized usability questionnaires? Sauro and Lewis have a whole chapter on that.

You can use *Quantifying the User Experience* as a self-study textbook in statistics for usability research or as a handbook to answer a specific need.

This is a very technical book with many formulas, lots of specialized vocabulary, and in-depth explanations. As Elisa Miller wrote in reviewing the first edition, having this book might have saved her "the cost of four semesters studying applied statistics" (Miller, *Technical Communication*, 60 (2), May 2013).

Sauro and Lewis provide a 15-page appendix as "a crash course in fundamental statistical concepts." If terms like "central limit theorem," "z-Scores," and "t-Distribution" seem hazy to you, definitely start with the appendix.

Also, you don't always have to work through the equations to use the tests. In many cases (as they tell you), Excel has a command that will run the test for you and Jeff Sauro's site, www.measuringu.com, has a calculator for that situation.

To help you use *Quantifying the User Experience* as a textbook, Sauro and Lewis include problems ("chapter review questions") at the end of each chapter and then give answers for you to check against what you did.

To help you use it as a handbook, they have four decision trees up front (pages 2 – 3). The decision trees lead to the appropriate statistical tests for different situations and tell you where in the book to learn about the tests.

If you are new to statistics and to quantitative usability studies, you might want to start with another Morgan Kaufmann book, *Measuring the User Experience*, by Tom Tullis and Bill Albert. You might also want to read the column on confidence levels by STC Fellow, Caroline Jarrett, at www.uxmatters.com. You would then likely feel more ready for *Quantifying the User Experience*.

If you own the first edition, the added value here is the new chapter on correlation, regression, and analysis of variance, and the updated work on standardized usability questionnaires.

Janice (Ginny) Redish

Janice (Ginny) Redish is president of Redish & Associates in Bethesda, MD. Ginny is an STC Fellow, Ken Rainey Award recipient, and former member of the STC Board of Directors. Ginny's latest book is *Letting Go of the Words – Writing Web Content that Works*.

IT Project Management: A Geek's Guide to Leadership

Byron A. Love. 2017. Boca Raton, FL: Auerbach Publications. [ISBN 978-1-4987-3650-3. 232 pages, including index. US\$49.95 (softcover).]



IT Project Management: A Geek's Guide to Leadership is designed to offer insight into the minds of your employer, employees, and coworkers. This insight should help you negotiate with people of different mindsets, temperaments, and backgrounds so you all can succeed in your careers. Particularly,

this book focuses on IT projects and dealing with the potentially difficult personality of a “geek.”

To start, Love describes what it means to be a geek, both as an employer and an employee. The book's intended audience is technical geeks everywhere, meaning intelligent people with a strong skill set and

deep interests. Love takes the common idea that a geek is a socially inept person and a troublesome coworker, and demonstrates how that stereotype is exaggerated and that geeks make the best project managers, especially on IT projects. This theory is backed up with data from psychological research. For example, the book contains a table describing introversion/extroversion, body language, and an application of Maslow's Hierarchy of Needs, as it applies to the career of an IT professional. After Love describes each scientific point, he breaks from theory and interjects an anecdotal story about a work event. These anecdotes are very detailed and contain descriptions of each theory. In each scenario body language is closely depicted in the story. Following each scenario, Love breaks down what happened and examines how the different characters acted and what they could have done differently to resolve the tension in the story. This technique of theory, example, and explanation runs throughout the book and does a great job of synthesizing key concepts into relatable knowledge. As the book progresses, it moves from a psychological study into more of a motivational guide, helping you alter your own habits to make yourself into a more useful project leader.

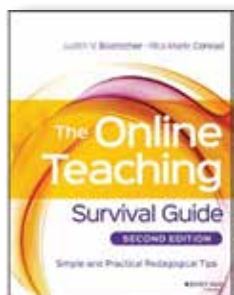
Overall, *IT Project Management* provides a good overview of the psychology of a workplace. If you are a manager, or are seeking to become one, this book may help you gain insight into both your employees and yourself. With that knowledge, Love hopes that you can improve your life and the lives of your coworkers, while leading them to success. Even if you do not consider yourself a geek, *IT Project Management* may help you work with people who do consider themselves one.

Timothy Esposito

Timothy Esposito is an STC Associate Fellow with over 15 years of technical communication experience. He is currently president of the STC Philadelphia Metro Chapter. Before becoming president, Timothy was chapter vice president, treasurer, webmaster, and scholarship manager.

The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips

Judith V. Boettcher and Rita-Marie Conrad. 2016. 2nd ed. San Francisco, CA: Jossey-Bass. [ISBN 978-1119-1914-7688. 375 pages, including index. US\$40.00 (softcover).]



I have taught two online courses and wished I'd had this book before I taught them. But I probably wouldn't have appreciated it as much. So if you are considering teaching an online class or have already taught some, I'd recommend this book for you.

According to Boettcher and Conrad, *The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips* is intended for “instructors with limited access to faculty support services and for faculty with little or no experience in online instructional environments and, likely, little time to prepare for online teaching” (p. xxvi). Of course, this likely includes adjuncts (like me) and graduate students as well as a good many technical communicators who may teach a class on the side.

Even though the book is based on “tips” as the subtitle indicates, it follows a structure based on the beginning, middle, and end of a regular semester-long course. This was not particularly helpful to me, since I teach in an accelerated environment, but to the authors' credit, they do have a separate chapter on “Teaching Accelerated Intensive Courses.”

The Online Teaching Survival Guide was helpful in confirming many of the things that I had thought or experienced while teaching online. Among them was the fact that the teaching role shifts dramatically from leader to facilitator. The teacher still determines most of the things about a class—grading, topics, resources, due dates—but you are no longer guiding the discussion. You may get to ask the question, but after that the online discussion takes on a life of its own. That's not necessarily bad, but it is different. And it may be good, in that all students have to talk and cannot hide behind others.

Another important fact that Boettcher and Conrad discuss is presence. Online faculty have to be present in an online class in some way, every day. I haven't learned

how to do this yet successfully and still do all the other things I have to do, including a full-time technical communication job.

They also stress the importance of videos in both teaching and as resources. Sitting in front of a camera is quite a bit different than lecturing. You don't have faces to look at and react to, unless you have the technology to do that, and you may. But this brings up one of my criticisms of the book.

I believe that teaching online is substantially different than teaching in person, and I don't think the authors necessarily address that. And in particular, the fact that students can act much differently online than they do in person. There is something about the online medium that removes inhibitions, and that can be good or bad, depending upon the person.

Other than that, and the presence of too many tables in *The Online Teaching Survival Guide*, I recommend it wholeheartedly.

Charles R. Crawley

Charles R. Crawley is an adjunct professor at Mount Mercy University in Cedar Rapids, Iowa, and as much as he hates to admit it, longs for the good ole days.

Assembling Arguments: Multimodal Rhetoric and Scientific Discourse

Jonathan Buehl. 2016. Columbia, SC: University of South Carolina Press. [ISBN 978-1-61117-561-5. 282 pages, including index. US\$59.95.]



Buehl's *Assembling Arguments: Multimodal Rhetoric and Scientific Discourse* deconstructs how scientists use textual and visual “modes” (hence, “multi-modal rhetoric”) to assemble evidence, develop arguments, and circulate arguments within their discourse community.

Science's importance in modern society makes such studies crucial. To develop a framework for multimodal communication and support pedagogy, Buehl describes how scientists select evidence to support their arguments. In so doing, he accounts for how visuals create meaning and the importance of audience and community. His

conception–assembly–circulation model unites these processes within cognitive, material, and social domains. He provides enough theoretical erudition to satisfy academics, including some whose theories are (charitably) abstruse, and enough practicality to satisfy practitioners. Unfortunately, the balance may satisfy neither; the result is both sophisticated and practical.

Buehl begins by summarizing modern rhetorical theory, which he expands to include graphics, a neglected rhetorical component. Ironically, these 36 dense pages contain no supporting visuals (apart from two plates). Omitting Bertin's *Semiologie Graphique* and Tufte's work undermines his discussion of visual grammar. Nonetheless, this is deconstruction done right, illuminating rather than concealing. Importantly, he notes the emergent behavior of text and images: meaning often evolves in unanticipated ways. Buehl doesn't insist on discrete categories; rather, his categories overlap and iteratively modify each other as rhetors craft and revise their rhetoric. Left implicit until later is how scientists use this approach to extract meaning while assembling their evidence. *Assembling Arguments* is appropriately illustrated, but Buehl creates no new graphics to show his model's ability to improve communication.

Scientists value “elegance,” which biases them toward certain visualizations. Buehl reminds us that even objectively choosing evidence influences our thoughts and what conclusions satisfy. Visualizations “model” data—they are not the data itself—and shape what we see and ignore. This has ethical significance: in deciding what evidence to include and exclude, communicators risk concealing inconvenient or contradictory evidence. Recognizing this inevitable subjectivity decreases the risk of self-deception. Buehl repeatedly demonstrates how the scientific discourse community influences how scientists assemble arguments, including assumptions about what constitutes facts and truth and how this shapes arguments and the signifiers that support them. Scientists tend to neglect the social context in which they're embedded, but truth does not speak for itself; the audience defines it.

Rigorously researched examples show how scientists revised their rhetoric to achieve persuasion by conceiving, assembling, and circulating knowledge, thereby demonstrating Buehl's model. Buehl writes clearly and well, with profound understanding of science's history and philosophy, but his jargon-heavy

text will dissuade many scientists who would benefit from *Assembling Arguments*. Conversely, the first case study's dense equations will dissuade many rhetoricians. The book's cramped type exacerbates the effect, creating intimidating pages.

Buehl's model matches my experience redesigning the text and graphics for 6000+ science manuscripts. The model should now be applied prescriptively rather than descriptively to test its utility. Chapter 14 begins this task, but at only 8 pages, does not codify a pedagogical model for teachers.

Rhetoric and science are both ways to approach truth. They're a powerful combination if rhetoricians and scientists can learn from each other. *Assembling Arguments* will help.

Geoff Hart

Geoff Hart is an STC Fellow with more than 28 years of writing, editing, translation, and information design experience. He is the author of two popular books, *Effective Onscreen Editing* and *Writing for Science Journals*.

How To Be A Writer: Conversations with Writers about Writing

David Quantick. 2016. London, UK: Oberon Books. [ISBN 978-1783199037. 220 pages. US\$23.95 (softcover).]



At first glance, *How To Be A Writer: Conversations with Writers about Writing* seems to be another instructional manual on becoming a writer. Yet this book is different because Quantick defines through the insights of writers themselves what it means to be a writer. The reader cannot come away from the book

without gaining a deeper appreciation for writers and a broader understanding of the craft. Quantick's quick wit also gives the reader some chuckles along the way.

In his introduction, Quantick loosely cites *How To Be A Writer* as a sequel to his book *How To Write Everything*. In his desire to author another book on writing, he wanted to emphasize what it takes to exist as a writer, to “be” a writer. “Everyone can write, to some degree – but not everyone is a writer” (p. 1). He clarifies

that a writer is “someone whose daily life, whose routines and whose calendar all revolve around the fact that they write.” Quantick explains that there are “two strands” in *How To Be A Writer*. “One is a writer’s day and the other is talking about writing in general” (p. 176). Both strands are accomplished well as the author uses interviews to expose the thoughts and quirks of writers and their daily rituals, frustrations, and rewards.

Following the introduction are twelve neatly structured chapters, each focusing on one interview. Quantick begins each chapter with a clever title taken from an interview quote, a personal introduction of the interviewee, a series of questions and answers, and ends with a commentary. He interviews well-known writers including Emma Donoghue (*Room*) and Jon Ronson (*The Men Who Stare at Goats*), columnists, television writers, crime writers, a literary agent, and even his personal accountant. The result is eclectic, entertaining, and educational.

The interviews stay true to the title, reading more like conversations as the subjects speak intimately and frankly on the business of writing. Quantick’s questions vary by profession, but he spends quality time on each personal experience. Answers to his questions on daily routine, balancing family with work, and generating ideas for writing dismiss the notion that writers stay in pajamas all day, writing endlessly. A writer’s day is revealed as very structured with meetings, e-mails, carpools, and kids. But there is always a set, special time for writing, intentional and necessary.

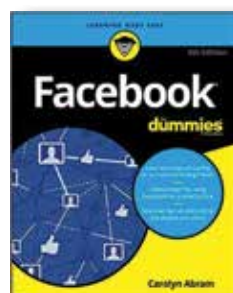
How To Be A Writer is highly helpful for writers, but Quantick’s humor makes it a good read for anyone. Even though a technical writer is not interviewed, the personal experiences described in the book are identifiable to technical writers or anyone who writes for a living. The book effectively shows that sustainability is needed in maintaining a career as a writer. “How do you get to be a writer? It’s easy,” Quantick states. “You just have to write” (p. 216).

Valerie Whaley

Valerie Whaley is a technical communication graduate student at the University of Alabama in Huntsville with an interest in training manuals and procedures. After a decade in the print media industry, she now uses her writing and training skills in the classroom as an elementary school substitute teacher.

Facebook for Dummies

Carolyn Abram. 2016. Hoboken, NJ: John Wiley & Sons, Inc. [ISBN 978-1-11917-903-0. 370 pages, including index. US\$21.99 (softcover).]



Abram gives us the lowdown on Facebook (FB) basics with the insight gained from being the very first Facebook user and then a company employee. The amount of information in this 370-page *Facebook for Dummies* could be overwhelming to a first-time user. Instead, consider

this as a guide to help you create a FB account in a few steps, find and invite friends, follow people you are interested in, and communicate using one of the most popular social media sites in the world.

In the process, your vocabulary will expand with words like: friend requests, news feed, posts, blocking, milestones, events, groups, and lists. In Chapter 3, Abram points out software features located in layers and navigation tabs with functionality depending on the screen viewed . . . and whether on computer or mobile phone (see Chapter 7). Screen captures are an important component since multiple ways are available to access the same function.

Your typical day’s activities, according to Chapter 4, will be to check the news feed, like a post, follow a person, post your status, limit who can view posts, or upload single photos or an album. FB is also ideal for locating old friends and classmates. For example, you might find a former spouse who moved across country when you were both younger. Now may be just the right time to restart a relationship.

When you want to get serious about FB, you can customize privacy and other settings using information in Chapter 6, track the number of friends you have and people who follow you, then create lists (Chapter 8) and groups (Chapter 10) to simplify communication, or schedule posts and events (Chapter 12). With help from the Index, you can troubleshoot any stubborn points about FB you haven’t been able to resolve. For example, did you know that you can belatedly view friends’ birthdates by checking a previous month in the calendar?

For technical writers, learning how to create a separate page for self-promotion or interfacing with your company’s users may be an assignment you’ve been avoiding. Procrastinate no longer, since Chapter 13

walks you through the process. You'll soon be an expert, assigning page roles to fellow employees and changing settings regarding whether customers can post. Use the settings tab in the blue bar at the top of the page . . . not in the drop-down menu.

The last chapters of *Facebook for Dummies* offer specific advice for gamers, students, and parents. The “Ten Frequently Asked Questions” chapter (Chapter 17) is guaranteed to provide new users with answers. But you already knew that, right?

Donna Ford

Donna Ford has been an STC member, joining in 1990 and serving on her local chapter's board for many years. She has been a technical writer since 1987 in the hardware, software, and government healthcare industries. Donna holds a certificate in Information Design from Bentley College. She also reviews books online for the US Review of Books.

The Wiley Handbook of Learning Technology

Nick Rushby and Daniel W. Surry, eds. 2016. Malden, MA. John Wiley & Sons, Ltd. [ISBN 978-1-118-73643-2. 596 pages, including index. US\$195.00.]



This review should celebrate a high-quality collection that effectively works to recenter educational technology and its practitioners back to their original purpose and goal: supporting learning. The thorough index and book's clear organization make for easy use. Clear chapter breaks and

construction support skimming and reading, while diagrams and figures are easy to understand and use. The content ranges from mapping the field (Chapter 1) and defining technology (Chapter 3) to addressing multiple situations for learning technologies (Chapters 7–10) as well as utopian (Chapter 29) and apocalyptic visions (Chapter 28) of technology in learning. There appears to be nothing missing—unless you or some of your learners are disabled or have some form of sensory loss or cognitive variance.

This radical shortcoming seeps into almost every chapter. Accessibility is absent from nearly 600 pages

with few exceptions: several mentions of W3C, a reference to deaf and blind learners, and a reference to cognitive and physical disabilities. Chapter 15, How to Succeed with Online Learning, has a short section about addressing special needs, but that's it. Chapter 20, The Design of Learning, mentions Universal Design for Learning, a process closely related and connected to many aspects of accessibility—but there's no mention of accessibility. Chapter 26, Futureproofing, and Chapter 27, Towards a Research Agenda for Educational Technology Research, both seem like excellent spots to at least mention or reference accessibility. When it does come up, it's barely mentioned.

This is a gross, and nearly unforgivable, oversight considering that the National Center for Education Statistics (NCES) documents that 11 percent of undergraduates self-identified as having a disability (nces.ed.gov 19 December 2016). Do these learners not matter? What about those who don't self-identify as disabled? What about those who use closed captions and transcripts to support their learning and study preparation?

The chapters on Diversity (16) and The Competencies for Designers, Instructors, and Online Learners (13) should have had explicit sections dedicated to accessibility. Every learning institution that has students, whether online or face-to-face, has students that have issues and needs around accessibility. Multiple lawsuits around accessibility are not just powerful threats; they message that competence in creating accessible content is vital for educational and learning technologists. Quality Matters builds Standard 8 around accessibility. Accessibility, and the legal risks for not addressing accessibility, are increasing.

When the text addresses access, it is usually framed in terms of the digital divide: ability to work with specific devices or actual Internet access.

Book's gems: Ryan and Latchen's (Chapter 10) discussion of ways to frame work, teaching, and research within the Boyer model was effective and accessible; multiple literature reviews; overall tight and lively writing styles throughout. In many ways, *The Wiley Handbook of Learning Technology* reflects the highest caliber work. Given this excellence, how could they overlook or ignore at least ten percent of our learners?

Gregory Zobel

Gregory Zobel is an assistant professor of Educational Technology at Western Oregon University.

System: The Shaping of Modern Knowledge

Clifford Siskin. 2016. Cambridge, MA: The MIT Press. [ISBN 978-0-262-03531-6. 318 pages, including index. US\$32.00.]



In a world of complex, interacting systems, many of which we document, it seems surprising there's any need to define something as obvious as "system." But that obviousness means we must step back and carefully rethink what "system" means and how that meaning shapes our interactions with

systems. In *System: The Shaping of Modern Knowledge*, Siskin takes us on a voyage from the Enlightenment to today to show how we've reached our current *modus vivendi* with systems. Like any tool for imposing order on the world, system helps us reshape, reorganize, and cope with the world's knowledge cornucopia.

"Histories can work like camera lenses, capturing an object from different angles" (p. 75). Siskin describes system's history from a cultural studies perspective. That's off-putting if you're unfamiliar with concepts such as genre, disciplinarity, travel, and culture. Beginning with Galileo's discovery of how Jupiter's moons revealed (orbital) systems within systems, Bacon's *Novum Organum Scientiarum*, and Newton's *Principia*, Siskin leads us on a merry intellectual romp through the past 500 years, name-checking Adam Smith, Malthus, Wordsworth, Darwin, and Dawkins, among others. These peregrinations don't always seem coherent or in clear pursuit of what system has become. Nonetheless, Siskin proposes a working definition to frame these explorations: "how knowledge is generalized, shaped, and put to work in the world" (p. 3).

To fully appreciate *System* requires broad and deep reading in history and literature; it assumes too much prior knowledge for those who, like me, have only read broadly. Providing more explicit context would clarify many nuances I sensed but didn't fully grasp. Thus, the book will be most interesting to academics (especially in cultural studies), but there's much to interest practitioners. Systems shape thoughts and actions; recognizing their effects lets us ponder how they shape the behaviors, constraints, and possibilities our diverse audiences face—and thus, how best to communicate with them.

Dating system to the Enlightenment, based on statistical analysis of a large corpus of text from this era,

seems flawed. Systems have constrained and shaped knowledge and thought for millennia; consider, for example, the *memory palace* systems of the classical Greeks and Romans. The Enlightenment taught us we can know the world from the evidence of our senses, not solely from received authority. In that context, *system* helps us assemble evidence into coherent wholes. Grasping something by naming it makes that name a powerful tool, but in this case, Siskin's focus on etymology may have missed the true origins of system.

Siskin never synthesizes his wanderings. Though he describes the historical oscillation between efforts to build master systems that encompass the world and narrower subsystems ("disciplines") that focus on the details, he never explicitly states this oscillation's importance: the progress of knowledge from overview to intense focus and back again is crucial for expanding our understanding and for communicating complexity. *System's* Coda is an exuberant "where we go from here" that leads from disciplinarity to "dedisciplinarity" (akin to E. O. Wilson's "consilience"), and will inspire discussion, but proves unsatisfying in its lack of a final synthesis of where we've arrived.

Geoff Hart

Geoff Hart, an STC Fellow with nearly 30 years of writing, editing, translation, and information design experience, is the author of two popular books, *Effective Onscreen Editing* and *Writing for Science Journals*.

Reason & Rigor: How Conceptual Frameworks Guide Research

Sharon M. Ravitch and Matthew Riggan. 2017. 2nd ed. Thousand Oak, CA: Sage Publications. [ISBN 978-1-4833-4040-1. 234 pages, including index. US\$60.00 (softcover).]



Rigor & Research: How Conceptual Frameworks Guide Research, Second Edition, provides excellent guidance for using conceptual frameworks for both quantitative and qualitative research. Students in technical communication graduate programs that require research theses or dissertations and technical communicators

planning research projects will find *Rigor & Research* extremely helpful.

The authors explain that “a conceptual framework is an argument about why the topic one wishes to study matters, and why the means propose to study it are appropriate and rigorous” (p. 5). Well-developed conceptual frameworks provide keys to conducting quality empirical research as they apply to diverse academic disciplines.

Rigor & Research provides nine useful chapters. Chapter 1 introduces the idea of conceptual frameworks. Chapter 2 explains how researchers use conceptual frameworks to develop and guide their investigations.

Chapters 3 through 8 provide guidelines for specific sections of articles and reports, and then illustrate them with examples from journal articles written by leading researchers in education, anthropology, psychology, linguistics, and major social science disciplines.

In Chapter 3, Ravitch and Riggan use Dr. Angela Lee Duckworth’s first article on grit (“Grit: Perseverance and Passion for Long-Term Goals.” [Duckworth, A.D., Peterson, C., Matthews, M. & Kelly, D.R. (2007), *Journal of Personality and Social Psychology*, 92(6), 1087]. Grit (a psychological concept) explains, in part, why individuals succeed at school and work. To begin, Ravitch and Riggan review how Duckworth’s early career shaped her thinking, then they show how Duckworth proposed the concept of “grit.” Next, Ravitch and Riggan show how Duckworth compared and contrasted grit, talent, and personality factors (variables). To close their introduction, Duckworth and her co-authors explained their research objective: “In the absence of adequate existing measures, we developed and validated a self-report questionnaire called the Grit Scale” to develop a scale (series of questions) to measure “grit” (p. 43).

Chapter 4 explains how conceptual frameworks guide developing research questions and the research design. Chapter 5 focuses on conceptual frameworks and methodologies guiding data collection and fieldwork. Chapter 6 provides guidelines for data analysis. Chapter 7 focuses on how conceptual frameworks can guide researchers’ presentations, explanations, and contextualize their findings. Chapter 8 explains how William K. Dunworth developed the conceptual framework for his studies and how they evolved. Chapter 9 provides specific guidance on using conceptual frameworks. Its questions, presented in boxed panels, can help guide graduate students through

their research. Ravitch and Riggan discuss the value of concept maps in visualizing the interlinking of key concepts in mapping a theory.

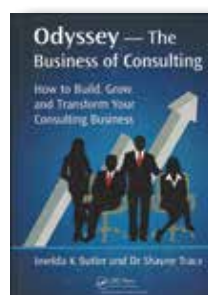
Throughout their nine chapters, Ravitch and Riggan cite more than 100 journal articles and books supporting the second edition of *Rigor & Research*. The author’s explanations of conceptual frameworks and guidelines can enhance researchers’ investigations of the complexities of technical, science, and specialized communication.

Don Zimmerman

Don Zimmerman is an STC Fellow and Jay R. Gould Award recipient. He taught technical communication classes and conducted research at Colorado State University’s Department of Journalism and Technical Communication. Don’s 150 publications include journal articles, book chapters, technical reports, presentations, newspaper and magazine articles, media productions, and books.

Odyssey—The Business of Consulting: How to Build, Grow, and Transform Your Consulting Business

Imelda K. Butler and Dr. Shayne Tracy. 2015. Boca Raton, FL: CRC Press. [ISBN 978-1-4987-2912-3. 196 pages, including index. US\$39.95.]



Odyssey—The Business of Consulting: How to Build, Grow, and Transform Your Consulting Business presents a solution-focused look at being an effective consultant. The authors identify four stages which consultants must go through to attain mastery at their trade: The Good Soldier, The Competent Warrior, The Trusted Advisor, and The Master Practitioner. The book then lays out a road map for moving up through the stages over time, a process the authors call “Odyssey,” drawing on the Greek epic. They argue that though making a living as a consultant is a difficult path to follow, it is attainable through their program.

The book is filled with useful knowledge about the business of consulting such as identifying your ideal client, doing research on a prospective client, organizing what they call a “Business Management Review,” or a

process that a consultant leads the client's team through to gain a better understanding of barriers within the client organization. The rest of the Odyssey process involves developing a firm relationship with clients, helping improve the way their organizations are run, and developing a trusted name for yourself as a consultant.

For this reviewer, this is where the book's utility ends, however. As a technical communication consultant for some years now, I am always looking for new tips on how to improve my work as a consultant. And this is a book I wish I'd had when I first started consulting several years ago, as I really had no idea how to develop an ideal client profile or conduct a review of a client's business. The more you read *Odyssey—The Business of Consulting*, however, the more you realize that the book is not for all consultants. The type of consultant the book is clearly geared towards are those working within the field of "management consulting," a field dominated by corporate executives who have left their management roles to consult with other businesses.

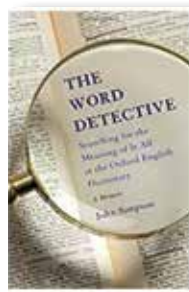
As a consultant who helps solve communication-related problems, I found that most of the case studies, exercises, and field-specific advice didn't apply to me. What I did find useful, and what I think others within technical communication who want to do consulting may find useful, was the approach to developing an ideal client profile, which I mentioned above. Ultimately, the book has a lot of good information on what good consultants do for a living, but I'm not sure how useful it will be to readers who want to launch consulting practices based in technical communication-related skill sets.

Guiseppe Getto

Guiseppe Getto is a faculty member at East Carolina University. He is also President and Co-Founder of Content Garden, Inc., a digital marketing and UX consulting firm.

The Word Detective: Searching for the Meaning of It All at the Oxford English Dictionary: A Memoir

John Simpson. 2016. New York, NY: Basic Books [ISBN 978-0-465-06069-6. 365 pages, including index. US\$27.99.]



In 1755, Dr. Samuel Johnson published a dictionary that would be used for 150 or so years. It was prescriptive and based meanings on usage. In 1844, members of the London Philological Society decided to publish a new dictionary that was descriptive and based on historical principles. After extensive

negotiations, Oxford University Press (OUP) agreed to publish it. Both the Society and the Press expected it to take about 10 years, but it wasn't until 1844 that the work began to appear and then in unbound "fascicles." In 1989, a second edition incorporated the previously published Supplement and a third edition is expected in mid-2000. Along the way, the Oxford English Dictionary (OED) appeared on CD (1988) and online (2000). So, how did it move from print to digital? John Simpson's delightful *The Word Detective: Searching for the Meaning of it all at the Oxford English Dictionary: A Memoir* tells us.

The book really tells two stories: Simpson's hiring as a lexicographer at the OED and rise to become editor, guiding the conversion from print to digital, and his family's struggles with raising a disabled daughter. If the book told only the first story, it would join a number of others that tell the same story. But, because of the second story, you get a picture of Simpson and his wife as they balance careers with care-giving.

The OED story that Simpson tells is from the inside. As always in projects of this magnitude, there are political decisions as well as decisions reached through compromise. As can be imagined, OUP was reluctant to undertake such an extensive, expensive project. Not only was a separate business entity necessary, office space, storage, and staffing were major problems. Yet, Simpson and others before and after him managed to convince the Press to undertake the project. *The Word Detective* details these negotiations, defeats, and ultimately victories.

The insight we gain from Simpson's narrative is one of love and devotion for both his family and the OED. He often laments as editor that he no longer is immersed

in creating entries, although he did occasionally do some. His job as editor was to manage this project and all that it entails—like deadlines, budget, hiring, etc.

Where the detective comes in is the aspect of lexicography that he thoroughly enjoys: tracking down etymologies, usages, and so forth, and turning them into entries. Scattered throughout the book are side notes where Simpson will take a word he just used and tell its story. For example, he uses “selfie” (pp. 337–338) and then explains that in 2013, it was the OED’s Word of the Year. We learn that it originated in Australia in 2002. If you are a word lover, these asides are pure gold.

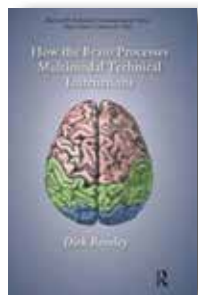
As technical communicators, whose main tool is language, learning more about the OED and its evolution will help you with your work.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he served as guest professor at the University of Paderborn, Germany.

How the Brain Processes Multimodal Technical Instructions

Dirk Remley. 2016. Amityville, NY: Baywood Publishing Company, Inc. [ISBN 978-0-89503-894-4. 204 pages, including index. US\$80.00 (softcover).]



Students (and some practitioners) have heard for years that adding visuals increases understanding and retaining text. Now, Remley’s *How the Brain Processes Multimodal Technical Instructions* provides the research to support such an assertion. In 10 chapters plus 3 Appendices, he presents what he calls a new model of

how extra elements aid cognition. His purpose is “an effort to identify a means to engage multiple fields associated with the cognitive function of learning” (p. vii). Remley further suggests that there are many problems when theories of technical communication rely on research from other fields. But, the history of technical communication makes considerable use of materials from other fields, such as psychology, sociology, biological sciences, humanities, and so forth.

One glance at the table of contents of a book that surveys theories of communication (such as Littlejohn’s *Theories of Human Communication*) shows the influence of other disciplines. In spite of his caution, Remley joins the discussion and narrows the disciplinary focus to cognitive neuroscience and psychology.

Much of the book is really a literature review into both neuroscience and social science. Along the way, he introduces his model as supported by these research results. Chapters 1–4 establish the research basis for his model and, beginning with Chapter 5, he analyzes case studies and examines various elements that can be added to enhance cognition—slide shows and simulators (Chapter 6), videos (7), and Web sites (8). Chapter 9 presents research implications for both education and workplace training with Chapter 10 providing his conclusion and directions for future growth. Appendix A presents challenges in historical research, Appendix B lists questions used in interviews related to the explosion, and Appendix C is a radio presentation by President Franklin Delano Roosevelt on armaments (from December 29, 1940).

Remley presents a model for developing effective training materials that rests on the cognitive enhancement that multimodal elements add. The literature review for most technical communicators can become oppressive. They want a model with its literature support secondary. This problem is not to suggest that the review be eliminated for two reasons: (1) the assumed reader is really the students studying user analysis, and (2) the need for some sort of proof that the model is legitimate and works.

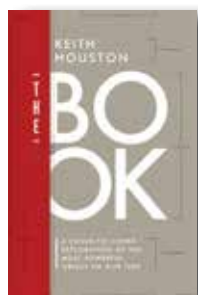
His model will be another way to address user analysis results—how to make the communication more effective and useful. With that focus in mind, an important readership for the book are those who prepare instructions for repetitive use. He focuses on the cognitive aspects, and that is where the neuroscience and rhetoric come in. If you need proof that learning is enhanced by using several elements in the text, then Remley is a good place to start. But be aware that the book is academic both in its style and the assumed readers.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he served as guest professor at the University of Paderborn, Germany.

The Book: A Cover-to-Cover Exploration of the Most Powerful Object of Our Time

Keith Houston. 2016. New York, NY: W. W. Norton & Co., Inc. [ISBN 978-0-393-24479-3. 428 pages, including index. US\$29.95.]



Let me say at the outset that *The Book: A Cover-to-Cover Exploration of the Most Powerful Object of Our Time* is the most perfect example of printing I have ever owned. I am not a book collector, but a book lover. And I absolutely love the way this book looks and feels. When you first see it, you'll know that it is not an

ordinary book, for it has callouts that describe every feature that makes a book a book. For example, on the cover, there is embossing that explains what the parts of the cover are: head, hinge, binding tape, author, title, subtitle, foot, and fore-edge. This continues through the first part of the book, but then stops when everything has been covered once.

Not only has Houston produced a beautiful and pedagogic book, but he believes in the importance of the book as an artifact: "However and whenever it was created, papyrus joined with hieroglyphics to create a self-contained mechanism for the storage and transmission of information—a pairing that endured as the premier information technology of the ancient world even as that world changed and expanded" (p. 9). Put that on your iPad and smoke it!

Houston has given us a wonderful example of technical writing as he covers the history of the book. He has detailed chapters on papyrus, parchment, paper, movable type, typesetting, illumination, woodcuts, copperplate printing, lithography, photography, and binding. If you don't want to know how the sausage is made, this is not the book for you.

One thing I took away from the book was a new appreciation of scribes. I grew up in a church tradition that constantly denigrated scribes, so it was refreshing to read that technical communicators inherited their craft from the scribes. Scribes were so important in the ancient Egyptian world that they had their own hieroglyph. And they taught us the importance of red ink, as "red [was] employed for important text such as headings, numerical totals, and the like" (p. 88).

A scribe was also known as a "corrector," which was "an experienced scribe engaged by more exacting scriptoria to proofread newly copied manuscripts" (p. 170). And like technical communicators, scribes often did not understand the text they were working with.

Another takeaway was that getting words and images on the same page has always been a challenge. Do you think that a Macintosh (Mac) was the first machine to wrestle with this problem? Think again. Just read the chapters on woodcuts and copperplate printing to appreciate the lengths that book developers have gone through to get a picture on the same page as print, two fundamentally different things.

You will learn many new things about *The Book* as you read it, and sometimes I felt he went too deeply into the weeds. But like Melville's *Moby Dick*, you can skip the technical stuff to get to the heart of the story.

Charles R. Crawley

Charles R. Crawley is a technical writer for Rockwell Collins in Cedar Rapids, Iowa, and an adjunct professor at Mt. Mercy University, also in Cedar Rapids. He's rarely met a book that he didn't like in one way or another.

Organizations, Communication, and Health

Tyler R. Harrison and Elizabeth A. Williams, eds. 2016. New York, NY: Routledge. [ISBN 978-1-138-85309-6. 438 pages, including index. US\$49.95 (softcover).]



The field of communication is broad and multi-faceted. When two complex modes of communication combine problems are bound to occur. Errors in communication and understanding are especially challenging when health communication combines with organizational communication, because the patient's health is at stake. *Organizations, Communication, and Health* seeks to bridge this "gap in the area of health organizations and organizing processes" (p. i).

According to the editors, the audience for this text includes "advanced undergraduate and graduate students studying health communication, as well as health professionals" (p. i). I must admit that I was skeptical

about this wide range of audiences, as undergraduate and graduate students in the communication fields are likely to be less familiar with the medical examples presented, and health professionals tend to be less willing to read theoretical texts about communication. However, most of the chapters present both the examples and the theory so clearly that both scholarly and clinical audiences could follow the discussion.

Organizations, Communication, and Health is divided into three sections, exploring organizing and communication issues, the effect on individual health, and collaboration between healthcare organizations. Each chapter relates to the overarching theme using a specific theory or multiple theories to unpack an example of communication in a medical setting. The chapters are clearly organized, using descriptive headings to assist the reader in finding pertinent information. Each chapter concludes with discussion questions and suggested reading lists that are a useful guide for reflection and that serve as valuable references for further topic exploration.

The editors of *Organizations, Communication, and Health* asked the authors not only to identify and to explain the theory underpinning their topic but also to explore a specific project and to use the discussion of that project to illuminate the theory and the pitfalls in communication that can result. The authors rose to this challenge. The content of each chapter was relevant and presented appropriate communication theories from which both students and medical professionals could benefit. The chapters cover a wide range of theories, from Foucault's "political technology of the body" (p. 197) to the biomedical and the biopsychosocial models of medicine (p. 122). The discussion of these theories is skillfully interwoven with examples of health communication in current contexts, such as the Ebola crisis (p. 384). These narratives serve to make complex medical and communication theories understandable on the practical level.

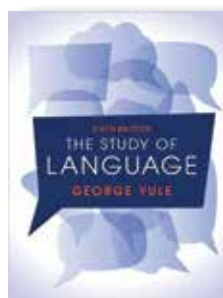
I found *Organizations, Communication, and Health* not only useful but a pleasure to read. One does not have to be an advanced communication scholar or a medical professional to learn about health and organizational communication from this text to benefit from the information presented. Because of the breadth and depth of the theories covered as well as the clear and current medical examples, I would not hesitate to use this text for an advanced health communication course or for a graduate course.

Nicole St. Germaine-Dilts

Nicole St. Germaine is an Assistant Professor in the Technical and Business Writing Program at Angelo State University, as well as a freelance writer and consultant. Her research interests include technical communication for a Mexican-American audience and technical communication in the health fields.

The Study of Language

George Yule. 2017. 6th ed. Cambridge, UK: Cambridge University Press. [ISBN 978-1-107-15299-1. 356 pages, including index. US\$89.99.]



Knowing how the subject you are studying originated and evolved helps you understand it. Whether it is chemistry, literature, or the Constitution, origin and evolution are significant contributors to studying it in a modern context. Such is the case with language. Yule's *The Study of*

Language begins with theories of how language began. Some are rather fanciful, such as the "bow-wow" and "pooh-pooh" theories. Such history establishes the context for language before he discusses other aspects that the student needs to know. While language is the principle tool of technical communicators, yet, few actually study it beyond some surface elements such as grammar, rhetoric, and multimedia use. This text is an opportunity for further and deeper study.

While Yule does not divide the 20 chapters into sections, the material falls into three general groupings. The first might be labeled rules, although Yule would object to that designation. These first 8 chapters allow the student to understand the sources of various grammatical approaches from prescriptive (based on Latin grammar) to descriptive (based on how language is used). A second part, Chapters 9 to 11, describe analytical approaches. The remaining chapters (12–20) cover first and second language acquisitions (13–14), gestures and signs (15–16), written language (16), and language history and change (17). Social and cultural topics (18–20) complete the book.

As is fitting for textbooks, Yule includes many examples that do not involve technical content and that lets the reader concentrate on how the examples fit the described principles.

For technical communicators, the book could prove valuable in reviewing what is known about the language, how it is used, and how it is analyzed. Typically, the pressing deadlines most face emphasize the need to plan carefully. For example, how much time is to be devoted to developing information based on the user's need to be helped in understanding it? Certainly, the grocery list requires much less time and careful language analysis than does a final report or scientific article. So, for this book to actually be of value to the technical communicator, it must provide needed information that the reader can quickly access.

The Study of Language includes student aids: Study Questions, Tasks, Discussion Topics/Projects, and Further Reading. A free study guide is available from the Cambridge University press Web site.

The book will help technical communicators understand approaches to language. What if a reviewer is a traditionalist and you are a descriptivist? If you are aware of where the traditionalist approach comes from, then you know how much political capital to spend in defending your approach.

As a textbook, *The Study of Language* has enjoyed success, appearing now in a 6th edition. As a reference and review for technical communicators, the book succeeds in bringing sufficient information about language for the technical communicator to increase user understanding.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he served as guest professor at the University of Paderborn, Germany.

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STC Summit Pre-Conference Courses (full day)	6
STC Summit Pre-Conference Courses (half day)	3
STC Virtual Summit	4
STC Annual Summit	8
Begin and complete a college-accredited course related to the Technical Communication field	8
Published articles that relate to any aspect of Technical Communication (2/article)	2
Published books publicly available on topics related to Technical Communication (5/book)	5
Presentations at conferences related to aspects of Technical Communication (2/presentation)	2
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Lyn Gattis, Editor

The following articles on technical communication have appeared recently in other journals. The abstracts are prepared by volunteer journal monitors. If you would like to contribute, contact Lyn Gattis at LynGattis@MissouriState.edu.

“Recent & Relevant” does not supply copies of cited articles. However, most publishers supply reprints, tear sheets, or copies at nominal cost. Lists of publishers’ addresses, covering nearly all the articles we have cited, appear in *Ulrich’s international periodicals directory*.

Collaboration

Quest for the happy ending to Mass Effect 3: The challenges of cocreation with consumers in a post-certeauian age

Reardon, D. D., Wright, D., & Malone, E. (2017). *Technical Communication Quarterly*, 26(1), 42–58. doi: 10.1080/10572252.2016.1257742

“The controversy surrounding the ending of Mass Effect 3 serves as a case study of a company’s rejection of cocreation with customers. The game designers and players battled for control of the aesthetic space of the game. The company failed to resolve their conflict effectively, allowing players to use social media to transform tactical action into strategic action. This case study has implications for technical communicators who increasingly are collaborating with users in cocreative relationships.”

Rhonda Stanton

Communication

Communication: Empirically testing behavioral integrity and credibility as antecedents for the effective implementation of motivating language

Holmes, W., & Parker, M. (2017). *International Journal of Business Communication*, 54(1), 70–82. doi: 10.1177/2329488416675450

“Motivating language theory . . . is a leadership communication theory focused on the strategic use

of leader oral language. Walk and talk alignment is a main pillar of motivating language theory. As such, within the field of educational leadership, [the authors] hypothesize that behavioral integrity and credibility are required in order for motivating language to occur. In this study, a survey was administered to teachers, from 2011 to 2014, at a Title I elementary school to gauge the motivating language use of the principal. [The authors] empirically tested the ability of behavioral integrity . . . and credibility . . . to predict the principal’s motivating language use. There were statistically significant correlations between behavioral integrity and motivating language, credibility and motivating language, and between behavioral integrity and credibility. In each year, behavioral integrity and credibility contributed significantly to the predication of the principal’s motivating language use. Behavioral integrity and credibility are integral to a leader’s use of motivating language. [The authors] discuss the results and implications for employees and organizations, along with ideas for future research.”

Katherine Wertz

Communication: Sine qua non of organizational leadership theory and practice

Ruben, B., & Gigliotti, R. (2017). *International Journal of Business Communication*, 54(1), 12–30. doi: 10.1177/2329488416675447

“Much has been written about the nature of leadership communication; however, the linkage often is limited to a view of communication as a strategic mechanism—or technique—to be employed by leaders in efforts to achieve specific purposes. This limited conceptualization of leadership communication does

not fully capture the pervasive role of communication, and it fails to provide a nuanced view of the role communication plays in organizational dynamics, and in business settings, in particular. This article begins with an overview of various dichotomies raised in the leadership literature that have tended to impede rather than advance our understanding. [The authors] then discuss the evolution of thinking about communication and conclude with a discussion of several principles that can enhance contemporary organizational and business communication theory and practice.”

Katherine Wertz

Leading by tweeting: Are deans doing it? An exploratory analysis of tweets by SEC business school deans

Naidoo, J., & Dulek, R. (2017). *International Journal of Business Communication*, 54(1), 31–51. doi: 10.1177/2329488416675448

“This study examines the extent to which the leaders of business schools engage with Twitter to reach diverse audiences, the possible links between Twitter usage and the ranking of the Dean’s respective business college, and the linguistic/stylistic approaches adopted. [The authors] employed sentiment analysis to examine the linguistic approaches among the various tweets from the Dean’s account. The findings of the study suggest speaking at stakeholders from a public microblog may not be the most effective way to connect with them. Notwithstanding, biological and cognitive constraints limit the economy of attention and relationships in an online world.”

Katherine Wertz

Reddit’s “Explain like I’m five”: Technical descriptions in the wild

Pflugfelder, E. H. (2017). *Technical Communication Quarterly*, 26(1), 25–41. doi: 10.1080/10572252.2016.1257741

“The genre of technical description is seeing a resurgence, particularly in online locations, where new, hybrid versions have emerged. The technical explanation, one such hybrid, proliferates on the social message board site Reddit and the message board ‘Explain Like I’m Five,’ in which answers to complex

questions are crowdsourced. This study examines 233 such questions and their answers, identifying the effort needed to generate technical explanations as distributed and coordinative technical communication work.”

Rhonda Stanton

Senders’ bias: How can top managers’ communication improve or not improve strategy implementation?

Shimizu, K. (2017). *International Journal of Business Communication*, 54(1), 52–69. doi: 10.1177/2329488416675449

“As environmental change accelerates and future uncertainty increases, implementation of strategy inherently involves continuous adjustment and modification. To meet the need for further research on the critical role of communication, this article contributes to the literature by examining the relationship between communication and strategy implementation. [The author] propose[s] that senders’ bias, which refers to the overestimation of the quality of communication (i.e., degree of sharing) with organizational members by senders (i.e., top managers), is a fundamental implementation problem. Thus, top managers’ perceived degree of communication with organizational members is expected to have limited effects on the degree of value sharing and resulting effectiveness of strategy implementation up to a certain threshold point. Additionally, [the author] argue[s] that the relationship between top managers’ perceived degree of communication and strategy implementation are moderated by the type of communication (i.e., whether storytelling is used in the communication), communication medium (i.e., the use of e-mails), and top managers’ openness to the voices of organizational members. The idea of senders’ bias should provide insights into why many organizations struggle with strategy implementation.”

Katherine Wertz

Situational determinants of cognitive, affective, and compassionate empathy in naturalistic digital interactions

Powell, P. A., & Roberts, J. (2017). *Computers in Human Behavior*, 68, 137–148. doi: 10.1016/j.chb.2016.11.024

“Empathy is apparent in computer-mediated communication (CMC), yet little is known about the situational predictors of empathic responses when interacting digitally. [The authors] used a diary methodology to explore: (1) the degree three types of empathy (cognitive, affective, and compassionate) are experienced in students’ everyday (text- and image-based) dyadic digital interactions; (2) which situational factors are important for (different types of) empathy in CMC; and (3) how empathy reported in everyday CMC affects participants’ perceptions of their empathy in CMC and face-to-face (FtF) contexts. One hundred student volunteers (50 women, $M_{age} = 22.57$ years) completed a ‘digital interaction diary’ for three consecutive days, yielding 1939 observations. Participants reported significantly more cognitive than affective empathy, and significantly greater affective than compassionate empathy. Several situational variables (e.g., number of communications, recipient) were related to empathy overall, while others (e.g., subject, mood) contributed to discrete contextual profiles for the empathy subtypes. Empathy reported in the diaries predicted a more favourable ratio of perceived CMC to FtF empathy, particularly for those lower in baseline trait empathy. These findings help elucidate the multidimensional experience of empathy in CMC interactions.”

Yvonne Wade Sanchez

Design

Assessing attitudes toward content and design in Alibaba’s dry goods business infographics

Zhang, Y. (2017). *Journal of Business and Technical Communication*, 31(1), 30–62. doi: 10.1177/1050651916667530

“Alibaba’s Graphic Media (GM) is the first and only Internet content source that uses infographics to

educate Chinese e-commerce merchants. This study investigates target audiences’ attitudes toward GM infographics. Two focus groups perceived GM as a practical information source that aided them in decision making and daily business operations. They preferred viewing graphics to texts and particularly favored statistical graphics. They also identified issues with viewing GM infographics on mobile devices. Based on the study’s findings, the author proposes three areas that communicators can address when designing infographics in similar contexts: content, usability, and overall visual appeal.”

Sean C. Herring

Orthographic processing and reading

Grainger, J. (2016). *Visible Language*, 50(2). [online] [doi: none]

The author of this study writes that “processing letter identities and letter positions occupies a central interface between visual and linguistic processing during reading. This is primarily due to the fact that reading words in languages that use an alphabetic script is essentially letter-based. Information about letter identities and letter positions provides the gateway to whole-word written representations, to morphemes such as prefixes and suffixes, and to sound based representations.” The study begins with a summary of “work on letter identification processes before describing mechanisms for parallel letter processing during single word reading.” The article concludes by describing “recent work demonstrating parallel processing of written information spanning several words during sentence reading.”

Lyn Gattis

Reading digital with low vision

Legge, G. E. (2016). *Visible Language*, 50(2). [online] [doi: none]

“Reading difficulty is a major consequence of vision loss for more than four million Americans with low vision. Difficulty in accessing print imposes obstacles to education, employment, social interaction and recreation. In recent years, research in vision science has made major strides in understanding the impact of low vision on reading, and the dependence of reading performance on

text properties. The ongoing transition to the production and distribution of digital documents brings about new opportunities for people with visual impairment. Digital documents on computers and mobile devices permit customization of print size, spacing, font style, contrast polarity and page layout to optimize reading displays for people with low vision. As a result, we now have unprecedented opportunities to adapt text format to meet the needs of visually impaired readers.”

Lyn Gattis

What is an information source? Information design based on information source selection behavior

Söderlund, C., & Lundin, J. (2016). *Communication Design Quarterly*, 4(3), 12–19. [doi: none]

“This article examines information source selection behavior among maintenance technicians and how this behavior might influence the design of technical information. For this entry, ‘maintenance technicians’ are individuals who maintain machine equipment (e.g., generators or bearings) in industrial enterprises, and this process includes the troubleshooting of problems and the repairing of machine equipment. In this entry, the authors use a review of the literature on information source selection behavior to discuss core concepts within the field of source selection behavior. Three of the main concepts examined are ‘information,’ ‘information source,’ and ‘source preference criteria.’ These core concepts function as a frame of reference for discussing how maintenance technicians might select information sources to perform maintenance activities. The authors also use these concepts to review why certain sources are selected for use over others. The results tentatively suggest maintenance technicians prefer information sources that can be adapted to specific workplace contexts.”

Lyn Gattis

Education

Instructor presence in instructional video: Effects on visual attention, recall, and perceived learning

Wang, J., & Antonenko, P. D. (2017). *Computers in Human Behavior*, 71, 79–89. doi: 10.1016/j.chb.2017.01.049

“In an effort to enhance instruction and reach more students, educators design engaging online learning experiences, often in the form of online videos. While many instructional videos feature a picture-in-picture view of instructor, it is not clear how instructor presence influences learners’ visual attention and what it contributes to learning and affect. Given this knowledge gap, this study explored the impact of instructor presence on learning, visual attention, and perceived learning in mathematics instructional videos of varying content difficulty. Thirty-six participants each viewed two 10-minute-long mathematics videos (easy and difficult topics), with instructor either present or absent. Findings suggest that instructor attracted considerable visual attention, particularly when learners viewed the video on an easy topic. Although no significant difference in learning transfer was found for either topic, participants’ recall of information from the video was better for easy topic when instructor was present. Finally, instructor presence positively influenced participants’ perceived learning and satisfaction for both topics and led to a lower level of self-reported mental effort for difficult topic.”

Yvonne Wade Sanchez

Transitioning from technical communication to user experience (UX): A case study of a collaborative curriculum redesign

Rice-Bailey, T., & Shalamova, N. (2016). *International Journal of Sociotechnology and Knowledge Development*, 8(3), 1–14. doi: 10.4018/IJSKD.2016070101

“This article details a collaboration between a Technical Communication (TC) academic program at Milwaukee School of Engineering and its User Experience (UX) industry and community partners. This collaboration resulted in rethinking a TC degree program and

establishing a new UX and Communication Design B.S. degree program. This article responds to TC scholarship calling for increased collaboration between academia and industry. The authors further explain how this particular collaboration was guided by Stakeholder Theory, enabling the program to identify its stakeholders and balance their differences while establishing new partnerships with the UX professional community. This article presents a case study of academia/industry collaboration and details both the challenges and successes that emerged during a program redesign. It concludes with models, a tools, and preliminary lessons that can assist other academic programs considering or undergoing similar curriculum or programmatic changes.”

Yvonne Wade Sanchez

Whatever happened to technical writing?

Tebeaux, E. (2017). *Journal of Technical Writing and Communication*, 47(1), 3–21. doi: 10.1177/0047281616641933

“This article provides a short history of the continuing issues that modern technical communication and technical communication faculty face. It discusses the first texts and many of the early pedagogical battles: Technical communication faculty faced literature faculty who saw the practical as the work of the devil, despite the fact that technical writing courses remained in high demand. Many recent books presented here discuss the problems of a culture steadily declining in educational quality and students who cannot write.”

Anita Ford

Ethics

From NoobGuides to #OpKKK: Ethics of Anonymous' tactical technical communication

Colton, J. S., Holmes, S., & Walwema, J. (2017). *Technical Communication Quarterly*, 26(1), 59–75. doi: 10.1080/10572252.2016.1257743

“Tactical technical communication research suggests its application to social justice. However, beyond a general advocacy of anti-institutional activity, de Certeau’s

notion of tactics provides no detailed ethical framework for ethically justifying tactics. In acknowledgement of this gap, this article foregrounds the ethical thought of feminist philosopher Adriana Cavarero, particularly her concept of vulnerability, as a supplement for those employing tactics for social justice causes. The authors examine the technical documents produced by the hacktivist collective Anonymous.”

Rhonda Stanton

Rhetorical work in crowd-based entrepreneurship: Lessons learned from teaching crowdfunding as an emerging site of professional and technical communication

Vealey, K. P., & Gerding, J. M. (2016). *IEEE Transactions on Professional Communication*, 59(4), 407–427. doi: 10.1109/TPC.2016.2614742

“. . . Crowdfunding provides an alternative to the way entrepreneurs traditionally raise start-up and operational funds for a venture. Moreover, with crowdfunding platforms, citizens and communities are increasingly able to engage in entrepreneurial work not only for profit but also to address social and civic problems Given the expanding boundaries of entrepreneurship, it is increasingly important for professional and technical communication teachers to prepare students to be ethical entrepreneurs and embody a widening array of rhetorical skills. . . .” The authors describe two student projects on civic crowdfunding “as illustrative cases of how students engaged crowdfunding as a form of civic entrepreneurship. . . . [This] teaching case has demonstrated the need to prepare students not only to pitch venture ideas for a small audience of investors, but also to consider how to identify and frame problems, construct stories about these problems as pressing matters of concern and, ultimately, develop ethical relationships with stakeholders and increasingly diverse investors.”

Lyn Gattis

Health communication

Classified conversations: Psychiatry and tactical technical communication in online spaces

Holladay, D. (2017). *Technical Communication Quarterly*, 26(1), 8–24. doi: 10.1080/10572252.2016.1257744

“This article examines the practices of writers in online discussion board conversations as they interpret technical documents related to a psychiatric diagnosis. Drawing from interviews with 15 participants, the author argues that writers in this context interpret and manipulate medical knowledge in unique ways that benefit the community. The author concludes that studies in technical communication should take into account all groups affected by specialized knowledge, including those with little expertise or social power.”

Rhonda Stanton

Information management

Chatbots and the future of technical communication

Hoffman, A., & Apodaca, A. (2016). *Best Practices*, 18(6), 88–93. [Center for Information-Development Management] [doi: none]

This article explores the growing use of chatbots, defined here as platform-independent computer programs users can “talk to, using some combination of rules (like a decision tree) and artificial intelligence.” Chatbots are “fully embedded into messenger applications like Telegram, Slack, or Facebook Messenger. [They] are apps within an app that can be programmed for an almost endless variety of tasks, guiding the user through choices or allowing them to message directly.” Although the concept is not new, chatbots are becoming more popular because they are an efficient alternative to downloading apps, and they can be “very easy to make and distribute.” The authors suggest that chatbots are a trend technical communicators might find relevant to user surveys, content creation, and messaging services.

Lyn Gattis

Status quo bias in information system adoption: A meta-analytic review

Wu, C. C. (2016). *Online Information Review*, 40(7), 998–1017. doi: 10.1108/OIR-09-2015-0311

“The purpose of this paper is to clarify the influence of status quo on information system (IS) adoption. Organizations often substantially allocate resources to leverage existing IT investments. The incumbent system deployment and the institutional environment will exert the influence on the new IS adoption of firms. The findings provide insights for explaining why firms conservatively react toward an emerging IT innovation. . . . Through a meta-analysis with 34 published studies, this study provides three observations. First, the results provide supports for the magnitude and significance of proposed relationships. Second, the relationships between status quo factors, expectations, and IS adoption are indeed related. Third, the considerable variability across effect sizes can be attributed to the type of adoption, the type of focal system, and the type of institutional pressures. . . .”

Yvonne Wade Sanchez

Intercultural communication

Leadership construction in intra- Asian English as lingua franca decision-making meetings

Du-Babcock, B., & Tanaka, H. (2017). *International Journal of Business Communication*, 54(1), 83–98. doi: 10.1177/2329488416675451

“In Asia, the English language serves as a lingua franca to connect people from various backgrounds for managerial synergy. In this study, [the authors] investigate leadership in a setting where English as lingua franca is used among Asian business professionals. Employing the notion of discourse, [the authors] use quantitative and qualitative analyses to identify how leadership emerges in meetings with multicultural participants, and how different types of leadership affect these decision-making meetings. [They] conclude that linguistic and contextual factors discursively construct different styles of leadership, and

that these leadership styles lead to starkly different team outcomes. The overall result indicates that a business meeting is not a logical process leading to a rational decision, but rather an organic mix of contextual, linguistic, and leadership factors when English as lingua franca is used in multicultural participants.”

Katherine Wertz

“Make a bomb in the kitchen of your mom”: Jihadist tactical technical communication and the everyday practice of cooking

Sarat-St. Peter, H. A. (2017). *Technical Communication Quarterly*, 26(1), 76–91. doi: 10.1080/10572252.2016.1275862

“Since the terrorist attacks of 9/11, Jihadist organizations such as al-Qaeda in the Arabian Peninsula (AQAP) have focused increasingly on motivating unaffiliated individuals in the United States and Western countries to carry out lone-wolf attacks in their home countries. To this end, many Jihadist organizations produce what is known as tactical technical communication. Jihadist tactical technical communication persuades individuals to act by creating identification between individuals and audiences, and by associating terrorist tactics with everyday practices such as cooking.”

Rhonda Stanton

A narrative perspective on international entrepreneurship: Comparing stories from the United States, Spain, and China

Williams, S. D., Ammettler, G., Rodríguez-Ardura, I., & Li, X. (2016). *IEEE Transactions on Professional Communication*, 59(4), 379–397. doi: 10.1109/TPC.2016.2608179

“This study investigates entrepreneurship as a rhetorical practice and seeks to illustrate how narratives of individuals from different cultures create a discourse of entrepreneurship.” The authors ask how “stories that are told by entrepreneurs from different cultures reveal their values,” and what those stories tell “about entrepreneurship in different cultures [The authors] collected entrepreneurial narratives in the US, Spain, and China, and deployed a novel two-fold

method to retain cultural nuances and validate translation accuracy. Narrative data were studied based upon the coding, constant comparison, and memo writing used in grounded theory. . . . [The authors] identify three core metaphorical devices used by participants to structure their entrepreneurial journeys (action and learning, autonomy and money, and exceptionalism and networks), and . . . suggest that the use of these metaphorical pairs varies both within and across cultures. These findings offer preliminary evidence, for the first time in the literature, that building a rhetorical understanding of entrepreneurship requires that we consider two axes: the individual and the cultural.”

Lyn Gattis

Language

Lookalike professional English

Van Hout, T., & Van Praet, E. (2016). *IEEE Transactions on Professional Communication*, 59(4), 398–406. doi: 10.1109/TPC.2016.2608198

“[This] teaching case reports on a fieldwork assignment designed to have master of arts students experience first-hand how entrepreneurs write for the globalized marketplace by examining public displays of language, such as billboards, shop windows, and posters. . . . [The authors] use linguistic landscaping (LL) as a pedagogical resource, drawing on similar cases in a local English as a foreign language (EFL) community in Oaxaca, Mexico; EFL programs in Chiba-shi, Japan; francophone and immersion French programs in Montreal, QC, Canada and Vancouver, BC, Canada; and a study of the entrepreneurial landscape in Observatory’s business corridor of Lower Main Road in Cape Town, South Africa. . . . [The authors] interviewed 36 students about their learning process in one-to-one post hoc interviews. Recurrent themes were increased self-monitoring, improved professional communication literacy, and expanded real-world understanding. . . . The main takeaway of the assignment is that students were more aware of the degree of linguistic innovation, rhetorical creativity, and ethnocultural stereotyping of entrepreneurial communication in their cities. . . . As a pedagogical tool, LL offers possibilities for exploring

entrepreneurial communication in all of its breadth and variety, providing access to perhaps the most visible and creative materialities of entrepreneurs and service providers: shop windows and signs.”

Lyn Gattis

Professional issues

Surviving outsourcing and offshoring: Technical communication professionals in search of a future

Virtaluoto, J., Sannino, A., & Engeström, Y. (2016). *Journal of Business and Technical Communication*, 30(4), 495–532. doi: 10.1177/1050651916651908

“Major trends, such as outsourcing and offshoring, and field-specific factors, such as the advent of content management systems, have fundamentally changed technical communication in recent years. These changes have been widely discussed in the literature of the field, and this article traces their impact on technical communicators in Finland, a high-cost country where downturns in the export industry and the downsizing of major employers are currently coinciding. Through the framework of activity theory, the article looks at the historical changes in the industry as sources of tension and contradictions that need to be understood in order to support professionals in the industry. With the help of interview data, the authors explore the tensions experienced by technical communication professionals in the face of such changes. This analysis leads to the formulation of a hypothesis of historical contradictions currently at play in the field of technical communication. Developmental potentials stemming from these contradictions are outlined as potential ways forward for technical communicators who notice similar tensions in their own environments.”

Yvonne Wade Sanchez

Research

Letterform research: An academic orphan

Beier, S. (2016). *Visible Language*, 50(2). [online] [doi: none]

“This paper looks into the history of letterform research and discusses why the discipline has yet to make the big break within design research. By highlighting two of the most popular focus areas (letter distinctiveness and the role of serifs) and by discussing various forms of methodological shortcomings, the paper suggests that future research into letterforms should (1) draw on results from the field of reading research (2) be based on test material informed by design knowledge and (3) move away from the former tendency of looking for universal answers.”

Lyn Gattis

Participating with pictures: Promises and challenges of using images as a technique in technical communication research

Sullivan, P. (2017). *Journal of Technical Writing and Communication*, 47(1), 86–108. doi: 10.1177/0047281616641930

“Image-based research conducted on and by research participants holds promise to extend participatory studies in technical communication by delivering research techniques that have been used for Policy Research in Public Health and other areas of participatory research (e.g., community-based participatory research). Even though they can expand policy (or even user design work), the use of participants’ images is not without challenges. The article discusses those challenges and suggests practices that stabilize the research logistically, relationally, and thematically; it also presents the approach as attractive for use in arenas that reward scrutiny even though they have traditionally been difficult to study.”

Anita Ford

Science writing

One scientist's struggle to be a better writer, and a plea for undergraduate science-writing engagement

Smith, D. R. (2016). *Science Communication*, 38(5), 666–674. doi: 10.1177/1075547016664737

“In an age where we are saturated with online information, effective communication is more important than ever. Unfortunately, many scientists are ineffective, unskilled, and/or not interested at communicating their research to the general public. Moreover, at some universities, undergraduate science students do not receive adequate training in writing and outreach, thus perpetuating the problem.” In this article the author recounts his “battle to become a better science writer and communicator and [his efforts] to integrate public outreach and popular writing into . . . undergraduate teaching and research.”

Yvonne Wade Sanchez

Usability

Measuring the first impression: Testing the validity of the 5 second test

Gronier, G. (2016). *Journal of Usability Studies*, 12(1), 8–25. [doi: none]

“This study aims at measuring the scientific validity of a method often used, but little formalized, to evaluate user experience: the 5 Second Test (5ST). To present this test, a fixed interface, such as a webpage or software screen, is shown to users for exactly 5 seconds. After 5 seconds, the interface disappears and test moderators ask a few open questions to elicit users' first impressions. To measure the validity of the method, an experimental protocol was developed to compare the elements that are most remembered when displayed for 5 seconds or for a period of time with no specified time limit. The hypothesis proposed is that the user will first focus on the elements specific to the non-instrumental qualities (hedonic qualities) of the interface during the first moments of the interaction, and then after 5 seconds, users can better perceive the instrumental qualities (practical qualities).

The results partially validate this hypothesis and show, in [the author's] view, the interest in the 5 second test that complementary studies must continue to validate.”

Ginnifer Mastarone

User value and usability in technical communication: A value-proposition design model

Acharya, K. R. (2016). *Communication Design Quarterly*, 4(3), 26–34. [doi: none]

“This entry defines value from users' perspectives and discusses the need to consider ‘user value’ as an important framework for enhancing product usability in technical communication. Arguing it is essential to involve users in the process of product design, the paper emphasizes the need to recognize users as value co-creators. To further enhance and extend the study of usability, this article proposes a value proposition approach to design and notes such an approach can help communication designers effectively design, test, and deliver materials end users want and value.”

Lyn Gattis

Visualizers versus verbalizers: Effects of cognitive style on learning with texts and pictures—An eye-tracking study

Koć-Januchta, M., Höffler, T., Thoma, G.-B., Precht, H., & Leutner, D. (2017). *Computers in Human Behavior*, 68, 170–179. doi: 10.1016/j.chb.2016.11.028 0747-5632

“This study was conducted in order to examine the differences between visualizers and verbalizers in the way they gaze at pictures and texts while learning. Using a collection of questionnaires, college students were classified according to their visual or verbal cognitive style and were asked to learn about two different, in terms of subject and type of knowledge, topics by means of text-picture combinations. Eyetracking was used to investigate their gaze behavior. The results show that visualizers spent significantly more time inspecting pictures than verbalizers, while verbalizers spent more time inspecting texts. Results also suggest that both visualizers' and verbalizers' way of learning is active but mostly within areas providing the source of information in line with their cognitive style (pictures or text). Verbalizers tended to

enter non-informative, irrelevant areas of pictures sooner than visualizers. The comparison of learning outcomes showed that the group of visualizers achieved better results than the group of verbalizers on a comprehension test.”

Yvonne Wade Sanchez

Writing

Rhetorical move structure in high-tech marketing white papers

Campbell, K. S., & Naidoo, J. S. (2017). *Journal of Business and Technical Communication*, 31(1), 94–118. doi: 10.1177/1050651916667532

“White papers are commonly produced by for-profit organizations to market high-tech products and services and are often created by technical writers. But writers of this genre have little evidence-based research to guide them. To fill this void, the authors tested a rhetorical move structure with a sample of 20 top-rated marketing white papers and found that, despite the lack of industry standards for white papers, those written for marketing purposes display similar rhetorical moves: introducing the business problem, occupying the business solution niche, prompting action, establishing credibility, and providing disclaimers or legal considerations. Based on the results of this study, the authors advance guidelines for writers of this genre and suggest areas for future research.”

Sean C. Herring